

PIGLET'S' GROWTH PERFORMANCE IN THE FIRST 3 DAYS OF LIFE IN CONNECTION WITH SUCKLED MAMMARY GLANDS

PERFORMANȚA DE CREȘTERE A PURCEILOR ÎN PRIMELE TREI ZILE DE VIAȚĂ ÎN RAPORT CU GLANDELE MAMARE SUPTE

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The trial was carried out in the maternity of a pig commercial farm, on three sows with 9 piglets each, during the first 3 days of life of the latter. We monitored the piglets for 72 hours daily from the point of view of the number of feedings per mammary gland to quantify the degree of use and milk production in relation with the anatomical location of the mammary glands. We could see there are daily variations of the daily weight gain in relation to their body weight at birth, and that mammary glands were differently used, i.e. the number of feedings is higher in pectoral mammary glands. Mean milk production per feeding varied between 14.49 and 59.73 ml, depending on the anatomical position and on the number of secreting cells in the mammary glands.

Key words: suckling piglets, mammary gland milk production

Introduction

Piglets' growth performance is defined by the mother-piglet relationship, the factors depending on the sowing being as follows: functional integrity of mammary glands and their productive potential. Piglets influence milk production through their number and the way they use mammary glands (1; 2; 3; 4; 5). Piglets' performance in survival, health, and body weight gain depend on this complex inter-conditioning.

This paper aims at contributing to a better knowledge of the mother – piglet relationship with a view to increase growth performance.

Materials and Methods

The trial was carried out on 3 sows during the first 3 days of lactation. Piglets were weighed upon birth, and 1 day, 2 days, and 3 days later. For 72 hours, we monitored the piglets from the point of view of the number of feedings from each mammary gland to quantify the degree of use of mammary glands and milk

production per mammary gland. Milk production of the mammary glands was calculated starting from the daily weight gain of the piglets (1 kg of weight gain for each 4.07 l of sow milk).

Results and Discussions

Depending on the order in which the piglets were delivered, there are variations of the body weight showing that piglets numbered 4, 5, 8, and 9 have the highest weights while piglets 2 and 3 have the lowest weights. In relation to the mean weight, only piglets numbers 2 and 3 of the 27 piglets in the three litters have a mean weight at birth below the mean weight of the lot at birth (Table 1).

Table 1
Daily weight gain in suckling piglets in their first 3 days depending on birth order

Specification	1	2	3	4	5	6	7	8	9	\bar{X}
Initial mean body weight (Kg)	1.370 ± 0.28	1.290 ± 0.06	1.260 ± 0.08	1.470 ± 0.17	1.470 ± 0.06	1.390 ± 0.21	1.350 ± 0.10	1.490 ± 0.08	1.500 ± 0.03	1.390 ± 0.08
Mean body weight after 3 days (g)	1840 ± 0.20	1710 ± 0.15	1460 ± 0.40	2060 ± 0.20	1990 ± 0.13	1770 ± 0.09	1820 ± 0.04	1960 ± 0.10	2120 ± 0.260	1860 ± 0.17
Daily weight gain (g)	156.66	140.00	66.66	196.66	173.33	126.66	156.66	170.00	206.66	154.00 ±32.26

This variation could be explained by the irrigation degree of the placenta of each piglet and by the ratio between length of the cervix and number of foetuses.

Daily weight gain in the piglets in their first 3 days of life is relevant for the size of the sows' milk production (the mean of the first 3 days of lactation is 5.88 l of milk).

In relation with the body weight at birth and the daily weight gain and piglet weight at birth, we could see that 87.71% of the piglets whose weight at birth was above the mean weight of the lot achieve, in their first 3 days of life, a weight gain higher than the mean of the lot (Figure 1).

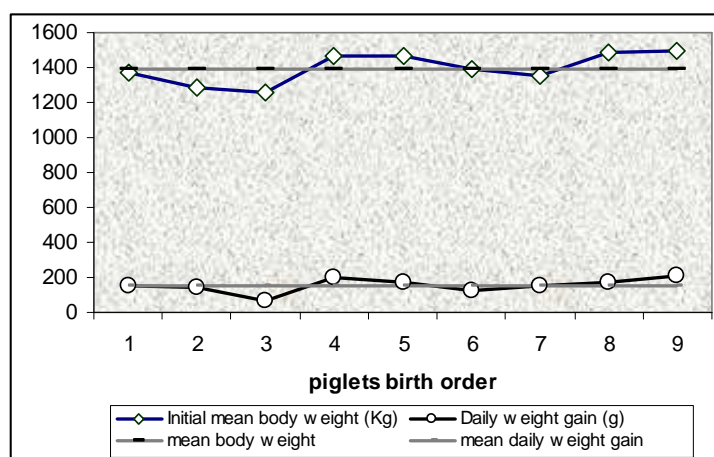


Figure 1. Relation between piglets' mean weight at birth and the daily weight gain in their first 3 days of life

Piglets whose mean weight at birth was below the mean weight of the lot achieve 100% body weight gains below the mean of the lot, underlying the increase of the difference of weight between piglets compared to their mean weight at birth. To also add the piglets not keeping their birth weight share. Thus, if upon birth 22.22% of the piglets had a weight below the mean of the lot, after 3 days of life the share of the piglets whose weight is below the mean weight of the lot increased to 55.55%.

To also note, on the ground of the differentiation of body weight during the first 3 days of life, the individual differences of the mammary gland milk production in relation to the degree of use of the mammary glands and their potential of meeting piglets' demands (Table 2).

Table 2

Degree of use and milk production in sows depending on mammary gland anatomical location

Specification	Mammary gland pair								Total
	1	2	3	4	5	6	7	8	
Total of feedings	338	263	220	170	189	167	179	58	
Mean number of feedings / day	37.55	29.22	24.44	18.89	21.00	18.55	19.89	6.44	176
Mean number of piglets / mammary gland pair	1.66	1.33	1.33	1.33	0.66	1	1	0.66	9
Mean number of feedings / piglet / mammary gland pair / day	22.62	21.80	18.37	14.20	31.82	18.55	19.89	9.76	157 (X=19.63)
Milk production / day (ml)	990	746	502	705	461	719	475	583	5180
Milk production / pair / feeding (ml)	43.77	34.22	27.33	49.65	14.49	38.76	23.88	59.73	36.48

We could see variations of the milk production in a pair of mammary glands per feeding (Figure 2), which shows that milk production of the mammary glands depends not only on their degree of use but also on their quality, i.e. on the number of secreting cells in a mammary gland.

Thus, in the mammary gland pairs 1, 2, and 3, milk production decreases with the number of feedings; mammary gland pairs 2, 4, and 6 have close milk productions: 746 ml, 705 ml, and 719 ml for a number of 21.80, 14.20, and 18.55 feedings respectively on the average per day, which represent a milk production per feeding of 34.22 ml, 49.65 ml, and 38.76 ml of milk respectively. The most used mammary gland pair was number 5 (31.82 feedings / day), but the milk production per feeding was the lowest – 14.49 ml. In exchange, the mammary gland pair number 8 supported only 9.76 feedings / day with the highest milk production of milk per feeding – 59.73 ml.

It is possible that mammary gland milk production be dependent on other factors than the number of secreting cells and degree of use by the piglets.

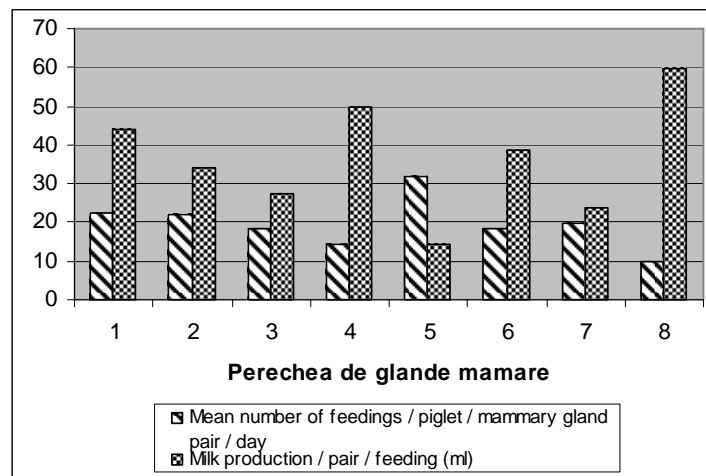


Figure 2. Relationship between the number of feedings per mammary gland in 24 hours and milk production per feeding

Conclusions

- In their 3 days of life, piglets whose body weight was below the mean body weight of the lot achieve smaller weight gains than the mean weight gain of the lot, which suggests failure in the competition with heavier piglets for the pectoral mammary glands.
- The mean number of feedings per mammary gland pair decreases from the pair number 1 (37.55 feedings / day) to the pair number 8 (6.44 feedings / day).

- Milk production per feeding / mammary gland pair varies from 14.49 ml to 59.73 ml, depending on the anatomical position of the mammary glands, use degree by the piglets, and number of secreting cells in mammary gland; milk production variations also suggest the existence of other influence factors.

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