

RESEARCH REGARDING REPRODUCTIVE PERFORMANCE RECORDED FOR LANDRACE X YORKSHIRE CROSSBREED SOWS USED FOR BACON PRODUCTION

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Abstract

The aim of this study is to present the reproduction performance recorded at Landrace x Yorkshire cross bred sows exploited for bacon production in an elite unit in Denmark. We have investigated several reproductive parameters: fecundity (depending on season), index of using sows for reproduction, prolificacy, number of piglets farrowed dead and the survival percentage to weaning. The obtained results were: average fecundity is between 91.66 and 92.22%; the average index of use for reproduction is between 2.35 and 2.37; the average number of piglets farrowed alive is between 14.35 and 14.37. The results are a consequence of valuable genetic material, as well as of the technology applied in the unit. The results are situated within the data presented in the specialty literature for these parameters.

Key words: sows, reproduction, fertility, prolificacy

INTRODUCTION

Swine breeding has a great social and economic importance in many countries. In the current growth and exploitation of pigs is considered that prolificacy is optimal when the number of piglets birth is equal to the number of sows tits (more than 14 piglets) [1], [8]. Overcoming prolificacy over this limit is usually accompanied by the reduction in birth weight and piglet vitality. It also requires the allocation of too high prolificacy supernumerary piglets from other sows or less, increasing their artificial process that does not always give satisfactory results. Increasing prolificacy can be achieved by using either breeding sows belonging to high yield hybrids is the use of tri or tetra racial half breed sows. Hybrids sows made from a combination of maternal and paternal breeds due to the phenomenon of heterosis, achieved a 10-15% higher prolificacy than pure breeds [3],[6]. The programs of the major genetic producers have been developed using different breeds: Landrace, Great White,

Yorkshire, Duroc, Hampshire, Pietrain, etc., as a pure breed or in the form of certified, tested and verified lines [5]. The research from 2017, show that the number of pigs weaned per sow per year can be used to compare the productivity of breeding herds, either between herds in a country or between countries. [7] The need to increase global meat production has made the world's leading swine-breeders to experiment and produce high-quality genetic material. They have developed selection and hybridization programs, providing healthy and performing breeding animals. By applying research, these companies have been able to provide more and more performing breeds to meet the needs of the breeders. The final goal is the quality of the finished product that meets consumer's requirements [2].

MATERIAL AND METHODS

In order to establish the reproduction performances, the research have intended to take into account 90 Landrace x Yorkshire cross-bred sows, exploited in a current manner within the danish farm, being divided in 3 groups:

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- Group L1 – 30 sows fed in pens with the capacity of 5 heads;
- Group L2 - 30 sows fed in pens with the capacity of 10 heads;
- Group L3 - 30 sows fed in pens with the capacity of 15 heads;

It was considered necessarily that for the three batches within the experiments should be studied the following reproductive indicators:

- fecundity;
- index of using sows in reproduction;
- prolificacy of females depending on season and number of farrowing;

- number of piglets farrowed by a female;
- mortality of piglets in maternity and their causes.

RESULTS AND DISCUSSIONS

Fecundity obtained at sows in the experimental group. As concerns fecundity, there is analyzed the concrete situation of the number of pregnant females after mating or artificial insemination. Table 1 presents data referring to the percentage of fecundity obtained from Landrace x Yorkshire cross bred sows, exploited in pens of different capacities, depending on the number of farrowing.

Table 1 Fecundity of sows

Farrow	Group	No. of inseminated sows	First control of 21 days		Second control of 35 days	
			No.	%	No.	%
I	L1	30	28	93.33	28	93.33
	L2	30	28	93.33	27	90.00
	L3	30	27	90.00	27	90.00
II	L1	30	28	93.33	28	93.33
	L2	30	28	93.33	27	90.00
	L3	30	28	93.33	28	93.33
III	L1	30	28	93.33	28	93.33
	L2	30	28	93.33	28	93.33
	L3	30	28	93.33	28	93.33
IV	L1	30	29	96.66	28	93.33
	L2	30	29	96.66	28	93.33
	L3	30	29	96.66	28	93.33
V	L1	30	29	96.66	27	90.00
	L2	30	29	96.66	28	93.33
	L3	30	29	96.66	27	90.00
VI	L1	30	27	90.00	27	90.00
	L2	30	27	90.00	27	90.00
	L3	30	27	90.00	27	90.00
Average	L1	30	28,16	93.88	27.66	92.22
	L2	30	28,16	93.88	27.50	91.66
	L3	30	28,00	93.33	27.50	91.66

According to the data presented in table 1, can see that the average of fecundity at the first control of the sows in the 3 experimental groups during the 6 farrowing has been close, being situated between 93.33% in the group L3 and 93.88% in the group L1.

As for the fecundity of sows in the second control (35 days), this one is smaller than in the first control with about 2%. The highest value of the fecundity in the second control was registered in the case of the second, third and fourth farrowing (93.33%) and the lowest value (90%) was registered at the first and the sixth farrowing, therefore to the end of the economical period of exploitation, so that we can state that the percentage of fecundity decreases with age. Between the average values of fecundity

from the second control there were not registered significant differences.

Index of using sows to reproduction. The reproduction indicator that better expresses the concern given to the sow (care, food, rearing, etc.) is the index of using sows to reproduction. This indicator shows us how efficiently are used the sows in the farm, an essential aspect in the amortization of costs. The index of using sows (Ius) or the index of using sows expresses the average number of farrowing obtained from a sow during a year. The index of using sows is considered good when it has the value 2 and very good when comprised between 2.3 and 2.5.

The data referring to the values of the index of use of Landrace x Yorkshire cross bred sows is presented in table 2.

Table 2 Index of using sows in reproduction

Group	Reproduction indicators (days)			Index of using sows (%)
	Average period for preparing the mating and the mating itself	Average period of pregnancy	Average period of lactation	
L1	10	115	30	2.35
L2	9	115	30	2.37
L3	10	115	30	2.35

Analyzing the data presented in table 2, one can notice that the highest value has been registered in the group L2 (10 heads in a pen) 2.37%, followed by the group L1 (5 heads in a pen) 2.35 and the group L3 (15 heads in a pen) 2.35%. The obtained values can be considered good if they are within the limits presented in the specialty literature for this parameter.

Prolificacy of Landrace x Yorkshire cross bred sows depending on season. The capacity of reproduction in swine is appreciated through prolificacy, which also supposes applying and respecting a complex of activities and measures, some of them depending on the animal and the other that are related to ensuring the environment

conditions, ending with the number and quality of weaned piglets during a production year. As the number of weaned piglets increases and is of good quality, the fertility is better.

The data regarding the prolificacy of L x Y cross bred sows depending on season is presented in table 3.

Studying the data presented in table 3, can see the fact that the number of farrowed piglets has been closer in the four seasons, at the three studied groups, being situated between 15.1 and 15.3 piglets per farrowing.

Also, there is noticed that the highest average number of farrowed piglets has been realized by the group L1, where the sows have been bred 5 in a pen.

Table 3 Average prolificacy of sows depending on season

Season	Group	Total piglets farrowed (head)	Piglets farrowed alive		Piglets farrowed dead (head)	Weaned piglets (head)	% weaned piglets from viable piglets
			Viable (head)	Unviable (head)			
Winter	L1	15.3	14.3	0.3	0.7	13.07	91.41
	L2	15.1	14.1	0.4	0.6	12.81	91.34
	L3	15.2	14.4	0.5	0.4	13.14	91.30
Spring	L1	15.2	14.4	0.3	0.5	13.14	91.27
	L2	15.3	14.6	0.2	0.5	13.30	91.15
	L3	15.3	14.5	0.3	0.5	13.22	91.20
Summe	L1	15.3	14.5	0.3	0.8	13.06	90.10
	L2	15.1	14.4	0.2	0.5	12.97	90.12
	L3	15.1	14.2	0.3	0.6	12.79	90.14
Autumn	L1	15.2	14.2	0.2	0.8	12.97	91.34
	L2	15.2	14.4	0.2	0.6	13.13	91.20
	L3	15.3	14.4	0.3	0.6	13.14	91.30
Annual average	L1	15.25	14.35	0.27	0.7	13.06	91.03
	L2	15.17	14.37	0.25	0.5	13.07	90.95
	L3	15.22	14.37	0.35	0.5	13.07	90.98

As of the number of piglets farrowed dead, we notice reduced values in all the batches situated between 0.4 and 0.8 piglets per farrowing, data that complies with the information provided by the specialty literature for this parameter. Moreover, the high percentage of weaned piglets from farrowed piglets, of about 90% in all the groups, fact which proves the excellent potential of good mothers of the Landrace x Yorkshire cross bred sows, as well as the very good technology practiced in the unit.

Mortality of piglets during maternity. In the industrial pig breeding of the last five

decades great economic losses have been noticed and mortality has been registered to litter piglets; these losses vary between 5% and 25% of the number of farrowed piglets. Among the major incriminatory causes the majority is represented by the digestive disorders manifested through diarrhea in the first days of life but also at the age of twothree weeks and immediately after weaning. The mortality registered in the experimental period for the three groups of pigs that were studies is presented in table 4.

Table 4 Mortality registered during maternity

Group	Weaned piglets (head)	Average number of dead piglets / sow during maternity period (head)	Percentage of losses from maternity (%)
L 1	13.06	1.3	10.04
L 2	13.07	1.2	10.89
L 3	13.07	1.3	10.05

From the data presented in table 4 we infer that the recorded data for this indicator are situated in the upper limits presented in the specialty literature for this parameter. The percentage of losses which was effectively

recorded during the maternity period at the experimental groups was placed between 10.04% (L1 group) and 10.89% (L2 group). Regarding the average number of dead piglets/sow during maternity period, this was

almost equal for the 3 groups being placed between 1.2 - 1.3 heads.

CONCLUSIONS

1. At the sows studied the fertility was influenced by the number of farrowing on a small scale. By comparing the registered fertility values for the 3 groups that were studied, we can notice that the average fertility value is very good of over 90% in all groups (L1 - 92.22%; L2 - 91.66%; L3 - 91.66%).

2. The prolificacy was influenced by the season on a small scale, the best values being obtained for all the batches in the spring seasons and the lowest values in the summer season.

3. The index of using sows for reproduction had very good values for all batches being between 2.35 and 2.37.

4. For the 3 group the losses of piglets registered until weaning was approximately 10% compared to the specialty literature which indicates losses of approximately 10-15% and which can be attributed to the special quality of sows as well as to the appropriate exploitation technology during gestation and especially after farrowing and until weaning.

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