

# Litter sizes at 1st and 2nd parities are predictors of sow lifetime productivity development

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## Introduction

The aim of the work was to study the relationship between the litter size (TNB) in the first and second parities and the reproductive abilities of sows in subsequent parities.

Table 1. The number of Landrace sows in groups depending on their productivity during 1<sup>st</sup> and 2<sup>nd</sup> parities

First parity			Second parity *							
Groups	Num.	%	O2L		O2M		O2H		O2VH	
			Num.	%	Num.	%	Num.	%	Num.	%
O1L	688	19,5	219	31,8	319	46,4	113	16,4	37	5,4
O1M	1309	37	402	30,7	583	44,5	235	18	89	6,8
O1H	972	27,5	233	23,9	412	42,4	226	23,3	101	10,4
O1VH	566	16	83	14,7	231	40,8	158	27,9	94	16,6

\*- 100% is the number of sows in O1

## Materials and methods

The study was conducted on Large White and Landrace pigs bred on the Russian breeding farm.

The calculations were performed using the method of mixed linear models, the fixed factors (birth year of sow, number of parity) and random factor (individual sow genotype, father genotype, etc.).

## Results and discussion

The differences in reproductive abilities between groups O1L and O1VH in Large white are 31,7 for TNB\_All; 29,3 for NBA\_All and 26,9 kg for BALWT\_All ( $p \leq 0,001$ ) and in Landrace 13,0 for TNB\_All; 12,5 for NBA\_All and 12,0 kg for BALWT\_All ( $p \leq 0,001$ ) throughout the period of economic use.

2<sup>nd</sup> parity: low productive sows retained significant differences comparing to the high productive sows. The advantages of the O2VH comparing to O2L are 28,6 for TNB\_All; 26,4 for NBA\_All and 25,8 kg for BALWT\_All ( $p \leq 0,001$ ) in Large white and 17,6 for TNB\_All; 17,5 for NBA\_All and 18,4 kg for BALWT\_All ( $p \leq 0,001$ ).

Table 3. Reproductive abilities through the lifetime of Landrace sows in reference to the number of piglets during 1<sup>st</sup> and 2<sup>nd</sup> parities

Groups	Total number born alive (NBA)	Total number born alive (NBA)	Litter weight, piglets born alive (BALWT)	Number of parities
O1L	56,79 ± 1,13	50,48 ± 1,05	66,98 ± 2,13	4,71 ± 0,07
O1M	63,80 ± 1,08	56,35 ± 1,22	74,85 ± 1,56	4,83 ± 0,07
O1H	67,40 ± 1,39	61,80 ± 1,31	74,75 ± 1,95	4,82 ± 0,10
O1VH	69,75 ± 1,25	62,95 ± 1,18	78,90 ± 2,02	4,76 ± 0,08
O1VH-O1L	12,96***	12,47***	11,92***	0,05
O2L	52,93 ± 0,99	47,03 ± 1,21	64,85 ± 2,56	4,58 ± 0,06
O2M	62,20 ± 0,81	55,00 ± 1,19	72,56 ± 2,15	4,85 ± 0,05
O2H	66,40 ± 1,20	62,50 ± 1,23	79,85 ± 1,83	4,84 ± 0,08
O2VH	70,51 ± 1,00	64,52 ± 0,98	83,26 ± 2,09	4,75 ± 0,06
O2VH-O2L	17,58***	17,49***	18,41***	0,17

\* -  $p \leq 0,05$ ; \*\* -  $p \leq 0,01$ ; \*\*\* -  $p \leq 0,001$

Table 4. Reproductive abilities through the lifetime of Large white sows in reference to the number of piglets during 1<sup>st</sup> and 2<sup>nd</sup> parities

Groups	Total number born alive (NBA)	Total number born alive (NBA)	Litter weight, piglets born alive (BALWT)	Number of parities
O1L	66,73±2,88	62,23±2,67	71,79±3,08	5,56±0,15
O1M	72,91±2,98	68,36±2,81	78,77±3,60	5,57±0,20
O1H	79,94±3,09	73,51±2,78	83,08±3,01	5,54±0,18
O1VH	98,60 ±4,65	91,50±5,00	98,70±5,98	6,20±0,20
O1VH-O1L	31,68*	29,27*	26,91*	0,64*
O2L	64,02±3,28	59,04±2,98	68,53±3,41	5,47±0,18
O2M	74,48±2,33	70,16±2,22	80,19±2,60	5,58±0,15
O2H	78,94±4,23	72,18±3,78	82,06±4,42	5,45±0,24
O2VH	92,60±4,28	85,48 ±3,95	94,28±4,54	6,04±0,25
O2VH-O2L	28,58*	26,44*	25,75*	0,57

\* -  $p \leq 0,001$

## Conclusions

The data obtained have demonstrated the significant effect of piglets' number at the first and second parities on the subsequent reproductive ability in Landrace and Large white sows and could be considered as reliable predictors of the subsequent reproductive ability in sows.

Table 2. The number of Large white sows in groups depending on their productivity during 1<sup>st</sup> and 2<sup>nd</sup> parities

First parity			Second parity*							
Groups	Num.	%	O2L		O2M		O2H		O2VH	
			Num.	%	Num.	%	Num.	%	Num.	%
O1L	42	10,8	26	61,9	6	14,3	8	19,0	2	4,8
O1M	96	24,7	46	47,9	30	31,25	16	16,7	4	4,2
O1H	122	31,4	24	19,7	42	34,4	32	26,2	24	19,7
O1VH	128	33,0	24	18,8	32	25,0	50	39,1	22	17,2

\*- 100% is the number of sows in O1



Landrace sow

[<https://www.britishpigs.org.uk/buyers-guides/british-landrace-buyers>]



Large White sow

[<https://www.rbst.org.uk/large-white>]