LITTER SIZE AND BETWEEN LITTER INTERVAL IN HALOTHANE POSITIVE AND NEGATIVE SOWS OF THE BELGIAN LANDRACE**

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The Belgian Landrace pig has been, from the 1950's, selected to a very meaty type. As well the ham percentage as the loin percentage and the meat-fat ratio are still becoming better. On the contrary litter size has decreased. Regressions, giving the evolution of some carcass characters (determined according to the Brussels dissection method) and of litter size are given in tabl.1. All regressions are statistically significant.

Table 1.
Evolution of ham %, loin %, meat. fat ratio and litter size in the Belgian Landrace.

Character	Period	Regr. equation	r^2
Loin %	1960-80	$\hat{Y}$ = 14.44 + .133 X*	0,63
Ham %	1960-80	$\hat{Y}$ = 19.11 + .066 X	0,58
Meat-fat ratio	1960-80	$\hat{Y}$ = 12.43 + .272 X	0,91
Litter size,total	1964-80	$\hat{Y}$ = 14.60 + .062 X	0,79
Litter size,alive	1964-80	$\hat{Y}$ = 12.61 - .042 X	0,49
Litter size,wean.	1964-80	$\hat{Y}$ = 10.77 - .032 X	0,59

*: X = year-1900

Research on stress susceptibility in this breed revealed that the susceptibility is very high but also that a selection against stress susceptibility will cause a loss in some carcass characters. A summary of these results is given in table 2. (Lampo, 1980,1981).

Table 2.
Some carcass parameters in halothane positive and negative B.L.-fattening pigs.

	Character	Hal. +	Hal. -
A.Females	Ham %	24.59 ± 1.05	24.37 ± 1.09
	Loin %	24.24 ± 1.10	23.74 ± 1.05
	Total meat %	65.10 ± 1.87	64.18 ± 2.29
	Meat-fat ratio	8.59 ± 1.58	7.96 ± 0.33
B.Males	Ham %	24.40 ± 1.00	24.02 ± 1.00
	Loin %	24.32 ± 1.05	24.08 ± 1.17
	Total meat %	65.52 ± 3.15	65.05 ± 1.89
	Meat-fat ratio	9.46 ± 0.28	9.17 ± 1.83

This economical loss can now possibly be overcome by a better fertility. Results found by WEBB and JORDAN (1978) are promising in that aspect.
A first experiment was done on the B.L.-sow population kept at the Experimental Farm of the State University of Ghent. Negative sows are all heterozygotes, while only results were used of sows mated to a positive boar. General results are given in table 3.

Table 3.
Some fertility parameters in Halothane positive and negative B.L.-sows. (Experimental Farm, University)

Character	Hal. +	(n)	Hal. -	(n)	Significance.
(1)	383 ± 40.5	(34)	399 ± 40.7	(40)	N.S.
(2)	7.56 ± 2.53	(36)	7.14 ± 2.82	(39)	N.S.
(3)	198 ± 50.6	(24)	193 ± 37.3	(24)	N.S.
(4)	6.36 ± 2.44	(36)	5.72 ± 2.49	(39)	N.S.
(5)	8.11 ± 2.76	(64)	8.82 ± 3.01	(71)	N.S.
(6)	189 ± 39.1	(42)	181 ± 38.4	(49)	N.S.
(7)	6.78 ± 2.37	(64)	7.39 ± 3.02	(71)	N.S.

(1): Age at 1st litter; days (2):Born alive, 1st lit.
(3): Interval betw.1st and 2th litter; days (4):Weaned, 1st litter (5): Born alive, 2th and foll.litters
(6): Interval betw.litters after 2th; days (7):Weaned, 2th and foll. litter.

A second experiment is still running on 6 conventional swine pig farms, known to have yet a population with as well halothane positive as negative sows. Only these litters from positive sows. served by a positive boar, and from negative sows served mostly by the same positive boars are studied so that differences are theoretically due to the sow genotype. The results found up to now are given in table 4.

Table 4.
Some fertility parameters in Halothane-positive and negative B.L.-sows on normal pig farms.

Character	Hal. +	(n)	Hal. -	(n)	Significance
(1)*	377 ± 77.3	(50)	367 ± 96.9	(76)	N.S.
(2)	8.52 ± 2.23	(50)	8.39 ± 2.25	(76)	N.S.
(3)	186 ± 47.8	(38)	179 ± 33.7	(63)	N.S.
(4)	6.30 ± 3.87	(50)	6.63 ± 3.17	(70)	N.S.
(5)	9.04 ± 2.09	(113)	9.46 ± 2.54	(263)	N.S.
(6)	168 ± 38.2	(75)	166 ± 32.0	(200)	N.S.
(7)	7.25 ± 3.33	(113)	7.83 ± 3.16	(263)	N.S.

* For the code: see table 3.

Although none of the differences given in table 3 and 4 are statistically significant, it is clear that from the similarity of the results in the two experiments some valuable conclusions can be drawn. It is observed that litter sizes at birth are higher in halothane negative sows but only in the second and following litters. For the first litter however, there is rather an opposite result. A possible explanation is that, in selecting for a meaty type, also an indirect selection was made to an earlier maturity. Differences in pig losses before weaning were not found in the first experiment but were present in the second. Interval between first and second litter is somewhat better in halothane negative sows but an other advantage is that variation is also smaller in the negative group. An similar result but to a smaller extent is found for the interval between the litters after the second one. It can be concluded from these experiments that in Belgian Landrace a selection for a smaller stress susceptibility also should result in a better fertility in the sows. Nevertheless, more research is needed to learn the effect of homozygoty or heterozygoty in halothane negative sows and the possible effects by the use of halothane negative (homozygote or heterozygote) boars.

Summary
Out of 2 experiments it can be concluded that selection to halothane negative sows in the Belgian Landrace possibly will result in a better litter size and in a shorter interval between successive litters.

Ref. - LAMPO,Ph. (1980). Rev. Agri. 33, 221-230
- LAMPO,Ph. (1981). Rev. Agri. 34, 213-219
- WEBB,A.J. and JORDAN,C.H.C. (1978) Anim. Prod. 26, 157-168.

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