BACKFAT THICKNESS AND PERCENTAGE OF THE LEAN MEAT IN THE REPRODUCTION CYCLE OF SOWS

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The reproductive function of the sows is highly dependent on its nutritional status and the amount of body reverses (Whitemore, 1996). For example, a high body fat or muscle mobilization during lactation, as well as an adequate body fat and or muscle mass content at weaning, have been proposed as playing a major role in the occurrence of post-weaning reproductive problems in sows (Prunier at al., 1993). However, even if sows are given the same level during lactation, the variation in live weight loss can be very large between animals (Stering at al., 1990). Increasing the level of body reserves before farrowing might protect the sow from a high depletion at weaning (Neil, 1996). In the primiparous sow, this can be achieved by increasing the food intake during the rearing period (den Hartog, 1984; Simmins at al., 1994), during the interval between selection (100 kg) and farrowing (O´Dowd at al., 1997) or during gestation (Weldon at al., 1994).

Measuring backfat thickness has become an important indicator of the pig's body condition since this has a direct relationship with its body fat content. A decrease in the backfat thickness is directly related to the inter- and intramuscular fat content. The backfat measurement, particularly in A, (measured 7 cm from the dorsal midline, level with the head of the last rib) can therefore be used in predictive equations to estimate the overall body fat content.

The aim this study was to note the influence of backfat thickness and lean meat levels of Czech Large White and Czech Landrace gilts during the reproduction of their first litters. 283 gilts were evaluated. The backfat thickness (BF) and the percentage of the lean meat (LM) were measured four times during the experiment. The backfat thickness and the lean meat values were measured at the end of the performance test and the backfat value was calculated per the weight of 90 kg and the lean meat was calculated per the weight of 100 kg. The second time they were measured was on the day of the sows´ first mating, then again, before the time of birth and on the day when the piglets were weaned. The phenotypic values of reproduction were then studied: the number of all born piglets, the number of born alive and the number of weaned piglets.

At the end of the performance test 283 gilts were tested. Their average backfat thickness was calculated at 0,83 cm and their average lean meat at 61,10 %. Then 230 gilts were mated. They averaged a backfat of 1,46 cm and a lean meat of 56,97 % on the day of their first mating. The backfat thickness showed an increase of 75,29 % ($P \leq 0,001$) while the value of lean meat showed degrease of 6,76 % ($P \leq 0,001$). At the time of farrowing 147 gilts were tested. Backfat showed an increase of 22,06 % ($P \leq 0,001$) on the mating day. A decrease of 5,24 % ($P \leq 0,001$) was recorded in the percentage of lean meat from this. The last measurement was done when the piglets were weaned. A total of 127 gilts were weaned. On their farrowing day decrease of 15,02 % ($P \leq 0,001$) in their backfat thickness was found, while the value of lean meat had increased by 3,29 %.

The correlative coefficients are demonstrated in Table 2. At the end of the performance backfat thickness test the correlative coefficients were recorded at between the values r = -0,0034 to -0,0432. The backfat thickness, which was measured on the day of farrowing, was found to have a negative influence on reproduction of the gilts. The correlative coefficients r = -0,01319 to -0,2173 were statistically conclusive ($P \leq 0,05$). The correlative coefficients values of backfat thickness on the day when the piglets were weaned were negative -0,2402 and -0,2554 ($P \leq 0,001$) and -0,3316 ($P \leq 0,001$). When looking at correlative coefficients of the percentage of lean meat it can be seen, that the lean meat percentage had a positive influence on the reproductive traits on the day of farrowing and on the days when the piglets were farrowed and weaned. The correlative coefficients were statistically conclusive ($P \leq 0,01$ and $P \leq 0,05$).

Changes in backfat thickness have been used as indications of changes in sows´ body compositions and especially in their fat statuses. Generally, sows lose backfat thickness during lactation. The backfat thickness and condition of the sows while they are lactating are becoming increasingly important since it is thought to affect other breeding characteristics.

Table 1: Basic statistical characteristic

Index		n	x	S_x^2	s_x	v_x	min	max
End of perform. test	BF (cm)	283	0,84	0,03	0,17	0,20	0,41	1,28
	% LM	283	61,10	2,99	1,73	0,03	56,46	66,13
Mating	BF (cm)	230	1,47	0,11	0,33	0,22	0,80	2,50
	% LM	230	56,97	9,83	3,14	0,06	46,30	64,20
Farrowing	BF (cm)	147	1,79	0,16	0,39	0,22	0,95	2,85
	% LM	147	53,99	13,63	3,69	0,07	43,10	61,30
Weaning	BF (cm)	127	1,52	0,15	0,39	0,25	0,75	2,85
	% LM	127	55,76	15,34	3,92	0,07	43,20	62,90
Piglets	All born	124	9,66	8,08	2,84	0,29	2,00	16,00
	Born alive	124	8,77	7,73	2,78	0,32	1,00	15,00
	Weaned	124	8,20	5,81	2,41	0,29	0,00	13,00

Table 2: Correlative coefficients between meatiness and reproduction

Index		All born	Born alive	Weaned
End of perform. test	BF (cm)	-0,0034	-0,0239	-0,0432
	% LM	-0,0219	-0,0059	0,0289
Mating	BF (cm)	-0,0172	0,0507	0,0118
	% LM	0,0091	-0,0741	-0,0199
Farrowing	BF (cm)	-0,1319	-0,1461	-0,2173[c]
	% LM	0,1354	0,1532	0,2298[c]
Weaning	BF (cm)	-0,2402[b]	-0,2554[b]	-0,3316[a]
	% LM	0,2035[c]	0,2241[c]	0,2856[b]

[a] $P \leq 0,001$; [b] $P \leq 0,01$; [c] $P \leq 0,05$

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