

TRAITS OF CARCASS QUALITY IN CZECH LARGE WHITE – SIRE LINE

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Abstract

Pure pig breed used in hybridization in the Czech Republic was tested in our experiment - together 16 animals of Czech Large White – sire line. These traits were evaluated: an average of back fat thickness, a percentage of main meaty parts, a MLLT area, pH1, pH24 and a content of intramuscular fat. The average height of back fat thickness was determined on a level 18.0 mm, the average percentage of main meaty parts was 53.81 %, an area of MLLT reached 4961 mm² in average, an average value of pH1 was determined on a level 6.08 and pH24 on a level 5.80. An average percentage of intramuscular fat content was determined on a level 0.62 %. Statistically conclusive higher ($p \leq 0.05$) values in a content of intramuscular fat were reached by hogs (0.75 %) in comparison with gilts (0.52 %).

The results of qualitative analyses of pork reflect the fact, that previous improving on high lean meat percentage had an influence on downgrade of some qualitative meat traits. The aim of this study was to evaluate an actual state of some chosen traits of carcass quality in pure pig breed used in hybridization in the Czech Republic – Czech Large White – sire line. The main studied trait was a content of intramuscular fat as one of the most important pork quality marker.

Material and methods

We studied pure pig breed used in sire position in hybridization in the Czech Republic - Czech Large White – sire line. The animals were tested on Stations of test on fattening and carcass performance. 24 hours post mortem a sample of muscle from musculus longissimus lumborum et thoracis (approx. 250 g) was taken from the area of semi-final and final thoracic vertebra of analysed animals. A content of intramuscular fat was determined by ether extraction (Soxhlet) in laboratory of Animal Breeding on Mendel University of Agriculture and Forestry.

These traits were evaluated: an average of back fat thickness, a percentage of main meaty parts, a MLLT area, pH1, pH24 and a content of intramuscular fat.

Data were statistically evaluated by program Unistat (t - test and Pearson correlation). Together were evaluated 16 animals – 7 hogs and 9 gilts.

Results and discussion

The average height of back fat thickness was determined on a level 18.0 mm. Hogs reached higher value (18.7 mm) compared to gilts (17.1 mm). The difference between sexes was not statistically conclusive. Results are shown in Table 1.

KERNEROVÁ et al. (2002) mention the average value in this breed on a level 15.6 mm. POUR et al. (1999) mentions higher level – 16.6 mm.

The average percentage of main meaty parts was 53.81 %. Gilts had an average percentage of main meaty parts on a level 54.14 % compared to hogs with 53.56 %. The difference between sexes was not statistically conclusive. Results are shown in Table 2.

POUR et al. (1999) mention 54.14 % of main meaty parts in Czech Large White – sire line, which is higher value then value determined in our experiment.

An area of MLLT reached 4961 mm² in average. An area in gilts was determined on a level of 4987 mm² compared to hogs with 4942 mm². The difference between sexes was not statistically conclusive. Results are shown in Table 3.

KERNEROVÁ et al. (2002) found out in Czech Large White an area of MLLT 5050 mm². Our data are closer to findings of POUR et al. (1999). They mention an area of MLLT 4918 mm².

Tab. 1: Basic statistical characterizations of back fat thickness (mm)

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	18.7	0.1155	3.3998	18.20	15.0	25.5
Gilt	9	17.1	0.0534	2.3111	13.48	12.8	20.0
Σ	16	18.0	0.0892	2.9863	16.58	12.8	25.5

Tab. 2: Basic statistical characterizations of percentage of main meaty parts (%)

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	53.56	1.5853	1.2591	2.35	51.36	54.93
Gilt	9	54.14	0.7916	0.8897	1.64	52.80	55.26
Σ	16	53.81	1.2498	1.1180	2.08	51.36	55.26

Tab. 3: Basic statistical characterizations of MLLT area (mm²)

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	4942	17.7304	421.0711	8.52	4068	5395
Gilt	9	4987	23.9191	489.0706	9.81	4295	5939
Σ	16	4961	19.0784	436.7918	8.80	4068	5939

An average value of pH1 was determined on a level 6.08. Hogs reached a value of 6.08 in comparison with gilts 6.09. The difference between sexes was not statistically conclusive. Results are shown in Table 4.

KOVÁČ et al. (1994) mention the fact that an average value of pH1 in Slovakia is included in interval 6.0 – 6.4. POUR (2003) recommends a value of pH1 on a level 6.0.

An average value of pH 24 hours post mortem reached 5.80. Hogs reached the value 5.78 and gilts 5.82. The difference between sexes was not statistically conclusive. Results are shown in Table 5.

KOVÁČ et al. (1994) mention an average value of pH24 in Slovakia 5.7 or less.

The most important studied trait was a content of intramuscular fat. An average percentage of intramuscular fat content was determined on a level 0.62 %. Statistically conclusive higher values were reached by hogs (0.75 %) in comparison with gilts (0.52 %). Results are shown in Table 6.

BEJERHOLM and BARTON GADE (1986) mention an optimal level of a content of intramuscular fat in musculus longissimus lumborum et thoracis 2.5 %. INGR et al (1993) mention a level of an intramuscular fat content should not be lower than 2 %. Our results show very bad situation in this pure pig breed and an importance to pay attention to improvement of a level of this quality trait.

Tab. 4: Basic statistical characterizations of pH1

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	6.08	0.0040	0.0636	1.05	6.00	6.15
Gilt	9	6.09	0.0136	0.1167	1.92	5.95	6.30
Σ	16	6.08	0.0089	0.0944	1.55	5.95	6.30

Tab. 5: Basic statistical characterizations of pH24

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	5.78	0.0107	0.1035	1.79	5.65	5.90
Gilt	9	5.82	0.0125	0.1118	1.92	5.70	6.00
Σ	16	5.80	0.0113	0.1065	1.84	5.65	6.00

Tab. 6: Basic statistical characterizations for an intramuscular fat content (%)

	n	Mean	Variability	Standard deviation	Coefficient of variability (%)	Minimum	Maximum
Hog	7	0.75*	0.0408	0.2019	26.94	0.49	1.07
Gilt	9	0.52*	0.0299	0.1730	33.27	0.29	0.80
Σ	16	0.62	0.0461	0.2146	34.60	0.29	1.07

* $p \leq 0.05$ **References**

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