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THE FAT COVER IN GILTS IN RELATION TO BODY CONDITION AND REPRODUCTION

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Abstract

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A study was conducted in a set of hybrid gilts of F_1 generation of Czech Large White x Czech Landrace breeds coming from a multiplication herd. The objective of the study was to test a possibility of using the measured traits, i.e. backfat thickness (BT) and lean meat content (LM), for objective determination of changes in the body condition score of gilts during rearing and in relation to their subsequent fertility in parities 1. At the ultrasonic measurement in the multiplication herd the purchased gilts showed the average daily gain (ADG) from birth 612.5 g, average backfat thickness (ABT) 8.34 mm, loin muscle depth (LMD) 48.83 mm and LM 62.26%. At the first determination of own performance traits in a production herd the values of ABT, LMD and LM were 13.26 mm, D 59.29 mm and 58.83%, respectively. In a subsequent measurement (at the onset of standing heat) the respective values of ABT, LMD and LM were 15.15 mm, 62.31 mm and 57.42%. Correlation coefficients for the measured traits of own performance in relation to reproductive traits in parities 1 were mostly low, statistically insignificant.

gilt, reproduction, backfat thickness, body condition

The evaluation of body condition is done by subjective assessment of the overall appearance of an animal either visually or by palpation. It is influenced by an evaluator's experience hence it is encumbered with a certain error. An effort for objectification led to the use of ultrasonic instruments designed for determination of own performance traits. First of all it is the determination of backfat thickness (BT) as an "energy reserve" of gilts (sows) and their readiness to enter the reproduction period or to their longevity.

Worldwide, and also in the CR, the problem of the relationship between meatiness and fertility has not been solved yet, particularly in dam populations. It is also difficult to define and predict the limits of optimum lean meat content (LM), possibly along with BT. The increase in meatiness must not influence the meat quality negatively (TVRDOŇ *et al.*, 1998; TVRDOŇ, 1999).

Negative relations between meatiness and reproductive performance were evaluated e.g. by BRIEN (1986) or GORDON (1997). BERESKIN (1984) computed negative, statistically insignificant values for genetic correlations between BT and litter size. GAUGHAN *et al.* (1995) demonstrated that gilts with the lowest BT had a lower number of parities and lower birth weight of piglets, and a lower number of piglets weaned. Differences were statistically insignificant. ZEMAN and ŠIMEČEK (1997) also reported a correlation between BT and reproduction, but no mutual statistically significant influence was confirmed either.

KERR and CAMERON (1995) concluded that single-trait selection for LM caused a decrease in fertility. Their findings do not fully correspond with conclusions of MERKS and MOLENDIJK (1995), TVRDOŇ (1999) and KUREŠ (2008), who published genetic correlations around zero between meatiness and reproduction. GRÁČIK (1997) also reported correlations between LM and total number born and number of piglets born alive in parity 1 on the level of 0.013 and 0.092, respectively.

A five-point scale is generally used to determine the body condition by a subjective method. KLAUS-

ING and LENZ (1994) reported four categories of body condition used by pig producers in Germany. They recommended the measurement of BT and its use in pig breeding. BT for the particular categories of body condition was documented in this way: 1. good (17.1 mm), 2. slightly thin (14.9 mm), 3. very thin (emaciated) (12.8 mm) and 4. fat (22.6 mm).

In connection with optimum, adequate to inadmissible condition NIGGEMEYER (1995, 1998) presented desirable BT (P_2 – above the last rib 65 mm from the central body line) in relation to parity. It is recommended to purchase gilts at the age of 170–180 days at 90–100 kg live weight and BT 12 mm, their 1st mating should be at the weight of 125–145 kg and BT 18–20 mm, first parturitions at the weight of 190–200 kg and BT above 22 mm.

HILGERS (2001) described the influence of live weight loss in gilts due to parturition and lactation in parity 1 on total number of piglets born (less than 15 kg – 11 piglets, 15–30 kg – 10.8 piglets, more than 30 kg – 10.3 piglets).

In connection with the influence of LM on fertility in sows of CL breed TVRDOŇ *et al.* (1998) reported the highest total number born and number of piglets weaned (11.5 and 11.1 piglets) in animals with LM less than 54% while the data were lowest in sows with LM 56–57.9% (10.4 and 9.6 piglets). They observed a positive influence of increasing BT on fertility. TVRDOŇ (1999) demonstrated an increasing age of gilts at the 1st mating with increasing LM. In 1994–97 in dam populations of CLW and CL breeds be found out the extension of age at the 1st mating by 12 and 10 days in groups of animals with LM from 54 to 60%.

KUNAVONGKRIT *et al.* (2002) accentuated the importance of BT as a selection criterion for longevity in gilts. They concluded that a reduction in fat reserve and body weight during lactation strongly influenced reproductive traits after weaning, mainly the onset of standing heat. However, this problem does not have an explicit solution, and the thickness of fat reserve has to be specifically modified for different herds, parity, breed, system of housing and management, etc.

GUEDES and NOGUEIRA (2000) studied the body condition at parturition through a reduction in BT and live weight during lactation and the onset of subsequent standing heat. This study was conducted on breeding gilts and sows of Camborough breed in parity 6 and 7. Average age and weight of mated gilts were 231 days and 149.5 kg. Feed mixture was administered *ad libitum* during lactation (14.03 MJ ME, 17% crude protein). Average daily feed intake was 5.2 kg in gilts and 5.7 kg in sows. BT (P_2) was measured 6 days before parturition and on day 2, 7, 14, 21 and 25 day after parturition. The animals were divided into 2 groups: BT less than 16 mm and more than 16 mm. There were no statistically significant differences between groups in the interval from weaning to the onset of standing heat, and no statistically significant correlations between the traits of live weight loss or BT reduction in % and the interval to the heat onset were computed. A positive correlation was found between the interval to the heat onset and % of live weight loss in the 3rd lactation.

REKIEL *et al.* (2000) studied 52 crossbred gilts of Polish breeds L x LW from mating to heat onset after parity 1. Age, live weight and BT (P_2) were examined during mating. Reproduction ability was very good and culling rate was low (13.46%). The analysis of the influence of live weight and BT showed that reproduction would be at an expected level in the used hybrid gilts if the mating weight reached 120–125 kg and BT ranged from 19 to 20 mm.

JOHN and WAHNER (1999) analyzed the development of live weight and BT in 218 hybrid gilts and/or 242 sows of the German Landrace breed. They proved positive correlations between BT and fertility during rearing to 180 days of age. They concluded that litter size was negatively influenced in animals with higher to high growth rates in the rearing period to 180 days of age (ADG higher than 600 g/day) and when the growth rate continued to increase by 10% and more. The same conclusions are applicable to BT higher than 17 mm. The results showed that the growth until sexual maturity influenced reproduction in parities 4.

The influence of growth rate, BT and LM on reproductive performance was studied in 262 gilts of the CL breed by BEČKOVÁ *et al.* (2005). BT from performance test influenced only age at the 1st mating and number of piglets weaned. BT at mating had an influence on total number born, number born alive and number of piglets weaned and on lactation performance. The authors also demonstrated a significant negative effect of higher LM on the studied reproductive traits.

TAROCCO and D'ORO (2003) determined body condition score and BT (P_2) at farrowing and after weaning in 56 hybrid gilts. They graduated each body condition score in the interval from 1 to 5 by 0.25 scores. They computed low positive correlations between body condition score and BT (0.35 at farrowing and 0.30 at weaning). A high number of piglets per litter was detected if the lower BT was 16 mm.

SWAN (1998) drew a conclusion that based on the long-term analysis of reproductive performance of the most frequently used genotypes of gilts in English herds the minimum traits in rearing for the 1st mating should be as follows: age 220–230 days, live weight 130–150 kg, BT 18–22 mm, 3rd standing oestrus. It was also recommended that the weekly weight gain of gilts after mating should be 5 kg and BT (P_2) should increase by 1 mm a week. Body condition score 3–3.5 (five-point scale) should be maintained by adequate nutrition in the period of pregnancy.

A similar problem was studied by O'DOWD *et al.* (1997) in 240 gilts of L and LW breeds with a low percentage of fat reserves. The results demonstrated that the correctly chosen feeding strategy, improving energy (fat) reserves in the body, increased fertility and longevity of young breeding sows. CERISUELO *et al.* (2005) examined the effect of a 50% increase in feed ration in an experimental group of gilts compared to the control (feed ration 3 kg/day at 36.5 MJ ME/day) administered in the period of 45–50 days to 80–85 days of pregnancy on live weight and BT in this period and in lactation period. On day 80 of pregnancy BT was statistically significantly higher in the gilts of experimental group. Even though the animals of experimental group tended to have lower feed intake in lactation period, the differences between groups in body condition after piglet weaning were not statistically significant. The significantly higher birth weight of piglets of experimental group was an exception.

YOUNG *et al.* (2004) documented the influence of feeding of breeding gilts and sows before mating according to body condition score. A higher number of animals in the category with optimum fat reserve show that the nutrition programmed in pregnancy period according to objectively measured BT are more accurate than that according to subjectively estimated body condition score.

MATERIAL AND METHODS

The objective of the paper was to test possibilities of determining changes in BT of gilts from their purchase to mating in relation to achieved growth rate, LM and their inclusion in the reproductive process, using traits measured in performance test and results of the level of reproductive abilities in parities 1.

The study was conducted in a set of 270 hybrid gilts of F_1 generation (CL x CLW) coming from a multiplication herd (MH) and purchased at average age of 5.5 months and average live weight of 91 kg.

BT (backfat thickness) and LMD (loin muscle depth) were measured with a Sonomark-100 ultrasonic instrument. Point B, where BT was measured, roughly corresponds to point P_2, which is used to determine the fat cover in other countries.

The first measurement of gilts was done in a multiplication herd at the average live weight of 91 kg, the second measurement was performed in a week after their movement to a production herd and the third measurement was done in a month after their movement to the production herd when most gilts showed standing heat.

Studied traits:

- 1st measurement – multiplication herd:
  - live weight (LW) in kg,
  - average daily gain (ADG) from birth in g,
  - backfat thickness (BT) measured at point A and at point B in mm,
  - average backfat thickness (ABT) in mm,
  - loin muscle depth (LMD) in mm,
  - lean meat content (LM) in %
- performance test – corrected values:
  - ADG from birth in g, BT (A) in mm, BT (B) in mm, ABT in mm, LM in %
- 1st and 2nd measurement – production herd:
  - BT (A) in mm, BT (B) in mm, ABT in mm, LMD in mm, LM in %
- reproductive traits:
  - total number born and number of piglets born alive in parities 1.

Summarized data were subjected to variation statistical analysis. Data were transformed to natural logarithms to obtain more advantageous distribution of data frequency towards normal distribution.

Coefficient of determination (R^2) and simple correlation coefficients (r_{xy}) were computed and the obtained regression functions were left in the original form for computations in the environment of natural logarithms. This situation should be taken into account to obtain specific points of a linear function in measured traits in the respective units.

Although summarized data on fertility were “adjusted” for abnormal litters (4 piglets born alive and less), the set of acquired data did not always show the “satisfactory” normal distribution; therefore it was reclassified in the traits of own performance into 4 classes using the mean and standard deviation(s) according to the scheme $< x–s$, $x–s$, $x+s$, $> x+s$. The observed trends in relation to gilt fertility, expressed by the number of piglets born alive in parities 1, are interpreted graphically.

User’s programmes Statistica, version 8.0, were used for computations.

RESULTS AND DISCUSSION

Table I shows the basic statistical data on the evaluated set of 270 reared gilts from a multiplication herd, F_1 generation crossbreds (CL x CLW), in the traits of own performance and subsequent fertility in parities 1. Live weight in the 1st ultrasonic measurement in the multiplication herd ranged from 72 to 120 kg with the average value of 91.20 kg. Growth rate, expressed by ADG from birth to the 1st measurement, had the value 612.50 g with the range of variation 486–803 g. BT (A and B) was 8.51 mm and 8.18 mm, respectively, with the respective coefficients of variation (V_x) 16.92% and 16.62%. LMD (B) was on average 48.83 mm, variability expressed by V_x was 6.92% and LM (the mean 62.26%) showed the range of variation from 58.90 to 65.90%.

The values of own performance (converted per 90 kg of gilt live weight) for the same order of observed traits were as follows: ADG 608.80 ± 2.67 g, BT (A) 7.84 ± 0.09 mm, BT (B) 8.10 ± 0.07 and LM 61.97 ± 0.07%.

Another measurement was done within a week after the purchase of gilts for a production herd. Transport, movement to a new environment, housing, management and level of nutrition, creation of a new social order, increasing live weight, age and physiological maturity, oestrus influenced the growth rate and measured values. BT increased at both points of measurement (A 14.27 ± 0.16 mm, B 12.26 ± 0.15 mm with the mean 13.26 ± 0.16 mm) while the growth of muscle tissue decelerated (LMD 59.29 ± 0.36 mm), which was reflected in a decrease

I: *Statistical characteristics of own performance traits and fertility of gilts (CL x CLW) in parities 1*

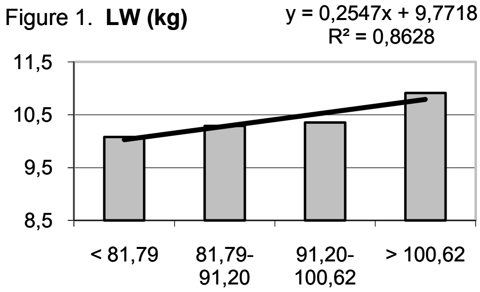
Traits	Mean	s_x	s	V_x	Min.	Max.
Multiplication herd – 1st measurement						
LW (kg)	91.20	0.57	9.41	10.32	72.00	120.00
ADG from birth (g)	612.50	3.84	63.08	10.30	486.00	803.00
BT – A (mm)	8.51	0.09	1.44	16.92	5.00	12.00
BT – B (mm)	8.18	0.08	1.36	16.62	5.00	11.50
ABT (mm)	8.34	0.08	1.37	16.42	5.00	17.75
LMD (mm)	48.83	0.21	3.38	6.92	42.00	64.00
LM (%)	62.26	0.07	1.23	1.98	58.90	65.90
Multiplication herd – performance test – corrected values						
ADG from birth (g)	608.80	2.67	43.91	7.21	501.00	744.00
BT – A (mm)	7.84	0.09	1.55	19.77	4.00	11.00
BT – B (mm)	8.10	0.07	1.18	14.46	4.70	10.40
ABT (mm)	7.97	0.08	1.30	16.31	4.75	10.60
LM (%)	61.97	0.07	1.16	1.87	59.20	65.50
Production herd – 1st measurement						
BT – A (mm)	14.27	0.16	2.68	18.78	8.00	23.00
BT – B (mm)	12.26	0.15	2.56	20.88	7.00	20.00
ABT (mm)	13.26	0.16	2.58	19.45	7.50	21.50
LMD (mm)	59.29	0.36	5.94	10.02	45.00	75.00
LM (%)	58.83	0.15	2.54	4.32	51.80	65.20
Production herd – 2nd measurement						
BT – A (mm)	16.33	0.17	2.83	17.33	9.00	26.00
BT – B (mm)	13.97	0.16	2.65	18.97	7.00	21.00
ABT (mm)	15.15	0.16	2.71	17.89	8.00	23.50
LMD (mm)	62.31	0.34	5.58	8.95	50.00	80.00
LM (%)	57.42	0.16	2.70	4.70	48.70	64.00
Reproduction						
Total number born – parities 1	11.37	0.16	2.68	23.57	5.00	18.00
Number born alive – parities 1	10.38	0.16	2.61	25.14	4.00	17.00

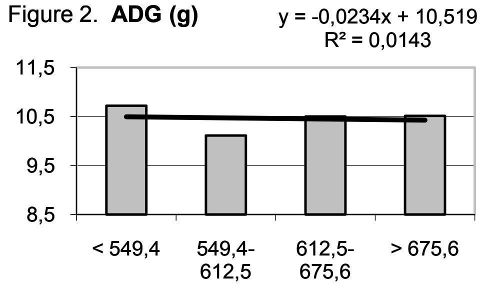
in the average LM to 58.83 ± 0.15%. Further growth of the organism continues in this period, and the development of reproductive organs is terminated at the same time. Gilts are preparing themselves for the 1st oestrus cycle, mating, pregnancy period and subsequent lactation. In this context some foreign authors recommend the fat cover (P_2) and/or body condition of unmated gilts 13.9–14.1 mm (KLAUSING and LENZ, 1994), 12–15 mm (Gráčik, 1997).

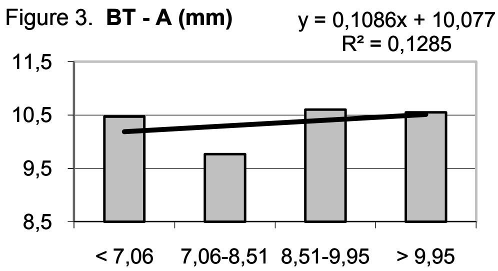
Part 4 of Table I contains data from the 2nd measurement of gilts in the production herd, in a month after purchase, when about a half of the animals showed standing oestrus and they could be mated. BT (A) was 16.33 ± 0.17 mm, (B) 13.97 ± 0.16 mm, and LMD amounted on average to 62.3 ± 0.34 mm and LM was 57.42 ± 0.16%. To maintain the good condition in mated gilts from the aspect of fat cover KLAUSING and LENZ (1994) recommended BT 16.6 mm while they considered BT 14.5 mm as minimum; NIGGEMEYER (1995) reported > 23 mm for parities 1 for the maintenance of optimum condition, and for the 1st mating the weight of 125–145 kg and BT 18–20 mm. Almost identical values can be found in REKIEL *et al.* (2000) for L x LW crossbred gilts in Poland. The determined value of BT (B) in the studied set would meet only 77 to 96% of these recommendations. KLAUSING and LENZ (1994) mentioned the same situation in some herds in Germany, where the fat cover was only 13.6 mm.

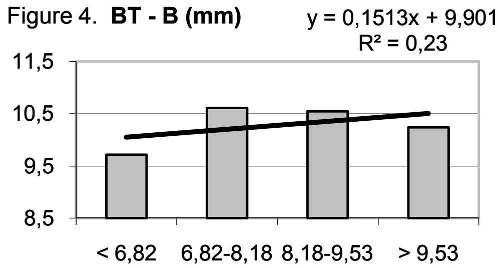
The last part of Table I documents the average level of gilt fertility in parities 1. In the studied production herd the average value of total number born and number of piglets born alive per litter was 11.37 ± 0.16 piglets and 10.38 ± 0.19 piglets, respectively (the coefficient of variation 23.57% and 25.14%, resp., corresponds to normal values in these reproductive traits).

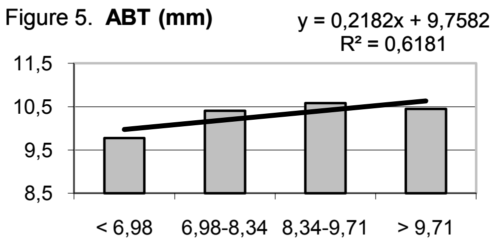
Graphical representation of relations (Figures 1–7) between the studied traits of own performance and fertility showed a linear trend of the total number of piglets born in parities 1 in relation to the live weight of reared gilts in the multiplication herd. Considering ADG from birth, average to above-average results were achieved by animals with lower growth

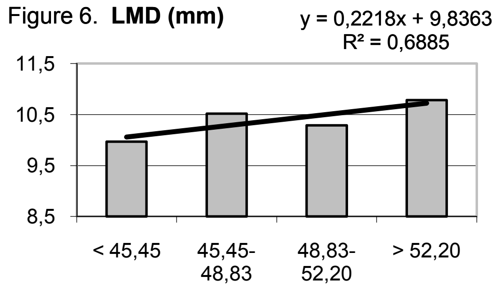


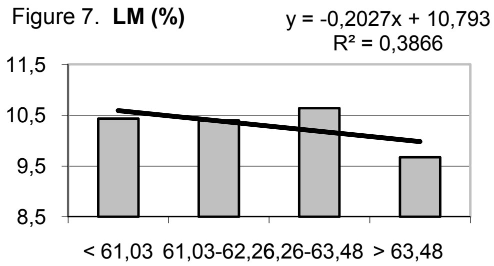






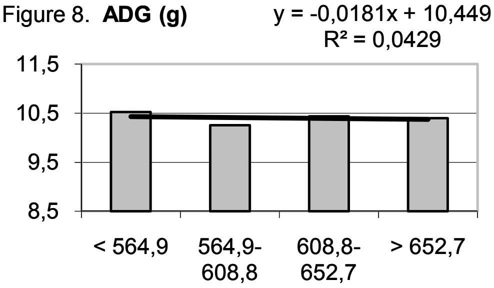


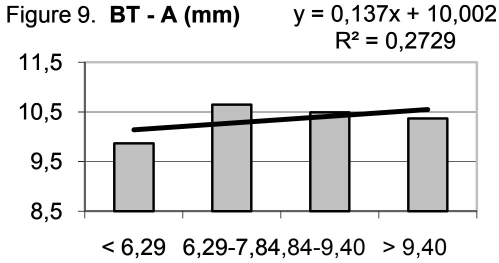


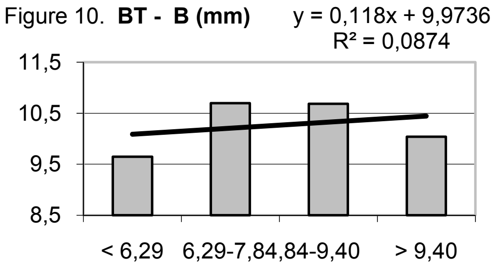


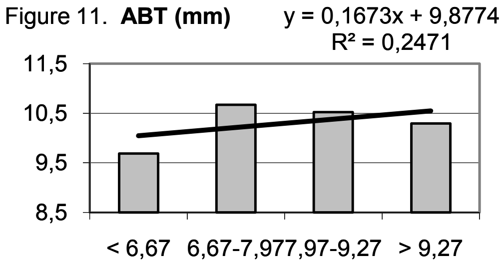
1–7: *The number of piglets born alive in parities 1 in relation to own performance traits*
Multiplication herd – 1st measurement

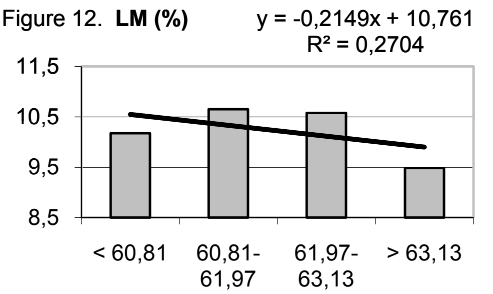
rate (< 549 g), with a sufficiently long rearing period necessary for the termination of development of a more voluminous digestive tract and later of reproductive organs capable to produce a sufficient number of fertilizable eggs also in stress situations which subsequently the organism undergoes during transport, movement to new housing, change in nutrition and feeding, management, at the onset of the oestrus cycle, mating and pregnancy. Based on practical analyses in a production herd, JOHN and WAHNER (1999) documented that litter size was usually negatively influenced in animals with higher to high











8–12: *The number piglets born alive in parities 1 in relation to own performance traits– correlated values*

growth rate in the period of rearing until 180 days of age when their ADG was higher than 600 g per day. The same conclusion was drawn for BT thicker than 17 mm. In our study it was observed in animals with the live weight of 110 kg with average BT 10 mm (A 10–11.4 mm, B 7–9.5 mm), with LMD 55.6 mm and LM from 59.8 to 63.5%. Their fertility was 10.4 to 10.6 piglets born alive.

If the converted traits of own performance per single live weight of 90 kg are used (Figs. 8–12), subsequent fertility was highest in gilts with ADG below 565 g, ABT 8 mm and LM around 61%. NIGGEMEYER (1995) recommended the purchase of gilts at the age of 170–180 days, live weight of 100 kg and BT (P_2) 12 mm. In CL breed TVRDOŇ *et al.* (1998) reported 11.5 piglets as total number born in parity 1 in sows with LM content below 54%, and 10.4 piglets in sows with LM 56–57.9%. Statistically highly significant differences in the total number of piglets born were demonstrated in sows with BT 11.1 to 14.0 mm in favour of higher fat cover.

As Table II shows, the computed correlation coefficients r_{xy}, which were in the range of 0.005 to 0.088, can be evaluated as low and statistically insignificant. The low closeness of studied correlations between the measured traits of own performance and/or converted values of BT (A and B), LMD (B) and the traits of fertility (total number born and number of piglets born alive in parities 1) is not a surprising finding. It proves that reproductive abilities of gilts are formed under the influence of polyfactorial conditions of external environment in combination with their genetic background.

Similar conclusions were drawn e.g. by BERESKIN (1984), MERKS and MOLENDIJK (1995), ZEMAN and ŠIMEČEK (1997) and KUREŠ (2008). GRÁČIK (1997) reported the correlations between LM and total number born and number of piglets born alive in parity 1 in the range of 0.013 and 0.092.

KUNAVONGKRIT *et al.* (2002) emphasized the importance of BT measurement as a selection criterion in gilts in relation to longevity and long lifetime

II: *Correlations between own performance traits and traits of gilt fertility in parities 1 (the shape of regression function is applicable in the environment of natural logarithms)*

Traits	Total number of piglets born (y)				Number of piglets born alive (y)			
	F	p	r_{xy}	R^2	F	p	r_{xy}	R^2
Multiplication herd – 1st measurement								
LW (kg)	0.102	0.749	0.020	0.000	0.078	0.780	0.017	0.000
ADG from birth (g)	0.396	0.530	0.038	0.001	0.077	0.782	0.017	0.000
BT – A (mm)	0.533	0.466	0.045	0.002	0.666	0.415	0.050	0.002
BT – B (mm)	1.019	0.314	0.062	0.004	1.529	0.217	0.075	0.006
ABT (mm)	0.806	0.370	0.055	0.003	1.109	0.293	0.064	0.004
LMD (mm)	1.651	0.200	0.078	0.006	0.008	0.928	0.005	0.000
LM (%)	0.654	0.419	0.049	0.002	1.881	0.171	0.083	0.007
Multiplication herd – performance test – corrected values								
ADG from birth (g)	0.760	0.384	0.053	0.003	0.156	0.693	0.024	0.001
BT – A (mm)	0.995	0.319	0.061	0.004	1.796	0.181	0.082	0.007
BT – B (mm)	1.387	0.240	0.072	0.005	2.038	0.155	0.087	0.008
ABT (mm)	1.308	0.254	0.070	0.005	2.083	0.150	0.088	0.008
LM (%)	0.754	0.386	0.053	0.003	2.199	0.139	0.090	0.008
Production herd – 1st measurement								
BT – A (mm)	0.621	0.431	0.048	0.002	0.477	0.491	0.042	0.002
BT – B (mm)	1.689	0.195	0.079	0.006	1.624	0.204	0.078	0.006
ABT (mm)	1.121	0.291	0.065	0.004	0.991	0.320	0.061	0.004
LMD (mm)	0.441	0.507	0.041	0.002	0.066	0.797	0.016	0.000
LM (%)	0.588	0.444	0.047	0.002	0.646	0.422	0.049	0.002
Production herd – 2nd measurement								
BT – A (mm)	0.178	0.673	0.026	0.001	0.874	0.351	0.057	0.003
BT – B (mm)	0.001	0.975	0.002	0.000	0.399	0.528	0.039	0.001
ABT (mm)	0.051	0.822	0.014	0.000	0.699	0.404	0.051	0.003
LMD (mm)	0.941	0.333	0.059	0.003	0.045	0.833	0.013	0.000
LM (%)	0.054	0.816	0.014	0.000	0.604	0.438	0.047	0.002

productivity. They found out the relationship with the occurrence of MMA syndrome (Mastitis-Metritis-Agalactiae), low birth weight of piglets, dystocia, milk production, etc. It was stated that the problem did not have an explicit solution and BT had to be modified for conditions of herds, parity, breed combination, housing technology, management, etc.

Similarly, BEČKOVÁ *et al.* (2005) used the available traits of own performance in gilts of CL breed for the analysis of reproductive performance. The influence of LM from performance test on reproduction was not proved. Logically, this trait, determined at the first mating, was significantly related with age and/or live weight at the first successful insemination; in higher LM a significant negative influence on reproductive performance was reported.

YOUNG *et al.* (2004) documented the influence of the system of feeding breeding gilts (sows) before mating, during pregnancy and after farrowing both according to the subjectively determined body condition score and according to measured BT. The feeding of animals during pregnancy according to the objectively measured BT enabled to increase the share of sows with fat reserve from 17 to 21 mm (good body condition, score 3) and to reduce markedly the share of animals with fat body condition (> 21 mm fat). The authors stated that nutrition programmed according to really measured BT was more accurate than that formulated according to the subjectively determined body condition score.

CONCLUSIONS

The method of BT measurement with ultrasonic instruments is expeditious, relatively cheap, and in spite of some variability in measured values it provides a real view on the body condition of an animal, and is more accurate that the subjective determination of body condition score. In the reclassified set of gilts groups were formed on the basis of the mean and standard deviation of studied traits of own performance (< x–s, x–s, x+s, > x+s). The gilts that had lower growth rates in own performance tests in the multiplication herd – ADG from birth to 595 g, live weight above 101 kg, ABT above 8.5 mm – were found to show higher fertility in parities 1. There was also a significant decrease in fertility in gilts with LM above 63.5% while the differences were insignificant below this level of meatiness.

It is to state in conclusion that it is necessary to use the objective measurement of fat reserve more frequently not only for the determination of own performance traits in reared gilts until the time of body condition scoring (sale) from multiplication herd to production herd but also at the 1st mating, and it is desirable to continue periodically in pregnancy period and at piglet weaning so that the producer could operatively control their nutrition and program their feeding with the aim of maintaining the acceptable body condition score in these physiological periods.

SUMMARY

A study was conducted in a set of 270 hybrid gilts of F_1 generation of Czech Large White (CLW) x Czech Landrace (CL) breeds coming from a multiplication herd and purchased at an average age of 5.5 months and live weight of 91 kg. The objective of the study was to test a possibility of using the measured traits of own performance, i.e. backfat thickness (BT) and lean meat content (LM), for objective determination of changes in the body condition score of gilts during rearing and in relation to their subsequent fertility in parities 1. At the ultrasonic measurement in the multiplication herd the purchased gilts showed the average daily gain (ADG) from birth 612.5 g, average backfat thickness (ABT) 8.34 mm, loin muscle depth (LMD) 48.83 mm and LM 62.26%. At the first determination of own performance traits in a production herd the values of ABT, LMD and LM were 13.26 mm, D 59.29 mm and 58.83%, respectively. In a subsequent measurement (at the onset of standing heat) the respective values of ABT, LMD and LM were 15.15 mm, 62.31 mm and 57.42%. Correlation coefficients for the measured traits of own performance in relation to reproductive traits in parities 1 were mostly low, statistically insignificant and they documented the polyfactorial influence of the complex of technological conditions of management and nutrition on the fertility of animals.

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