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LINEAR ASSESSMENT OF ATTRIBUTES OF GROWTH OF YOUNG STOCK OF PIGS AND THEIR LINK TO MEAT QUALITIES

The purpose. To probe influence of boars of large white breed of foreign selection upon indexes of exterior, dressing and meat qualities of their progeny, to calculate the level of correlation between attributes and to determine efficiency of use of indexes of constitution of a body for early prediction of quantitative attributes with high level of inheritance. **Methods.** Biometric, analytical, and conventional zootechnical methods. **Results.** It is fixed that use of boars of large white breed of foreign selection positively influences indexes of linear body growth of their progeny in an early ontogenesis, and also dressing and meat qualities. **Conclusions.** The maximum indexes of body build (prolixity, massiveness, bony) are characteristic for the young stock of pigs gained from sows of large white breed of Ukrainian selection and boars of large white breed of French selection (+1,47 %). Use of boars of large white breed of foreign selection promoted increase of dressing percentage for 2,93%, increase of length of the refrigerated carcass for 2,4 cm, increase of square of “muscle eye” for 3,06 cm², increase of mass of rear third part of refrigerated half carcass for 6,37%.

With the purpose to early predict dressing and meat qualities of young stock of pigs it suggested to use indexes of body constitution: deep-chestness ($r=0,443 - 0,496$), bony index ($r=0,419$).

Key words: young stock of pigs, exterior, meat qualities, indexes of constitution of a body.

Numerous studies have found that the large white pigs of the combined productivity direction are the most adapted to the conditions of abstinence and concentrate type of feeding. Animals of this genotype are characterized by a long term of economic use and high rates of reproductive ability [4, 6, 7, 13]. It should be noted that the desired type of body structure of pigs with high productive properties is difficult to create in a large number of animals without the use of index methods for evaluating performance characteristics [1 - 3, 5, 8, 14]. However, the literature does not adequately cover the application of

the results of the exterior evaluation by the body structure indexes and their use for the early prediction of the meat properties of young piglets of the universal direction of productivity. This determines the relevance of the work performed, as well as the vector of our further research. The purpose of the research is to investigate the influence of the breeding buds of a large white breed of foreign selection on the exterior characteristics, the slaughter and meat properties of their offspring, to calculate the level of correlation between the signs and to determine the effectiveness of using the body structure indexes for the early prediction of quantitative signs with high level of inheritance. Material and methods of research. The experimental part of the research was conducted in the conditions of breeding plant for breeding large white pigs LLC LLC "Olympex Agro" Dnipropetrovsk region. The object of the research was the young pigs of large white breed, obtained from sows of a large white breed of Ukrainian breeding and pupae of the same origin of the Ukrainian (I control group), English (II experimental group), Danish (III experimental group) and French breeding (IV experimental group). Estimation of the exterior of young pigs was carried out on the basis of measurement of the main linear measurements (height at the withers, body length, breast width, depth of the chest, chest circumference with shoulder blades, circumference of the heel) and calculation of body structure indices (stretch, massivity, sagitability, , bony) [11, 12]. Evaluation of meat properties of pigs in experimental groups was carried out in accordance with the requirements of the method [10]. The biometric processing of the obtained research results was carried out according to the method of O.K. Merkuriev [9]. Research results. Results of evaluation of young pigs of experimental groups for body structure indices indicate that the animals of the IV experimental group were characterized by the maximum indices of stretch, massiveness and bone density indexes. The difference in these indices compared to those of the control group I and II of the experimental groups was 2.3 (td = 1.51; P <0.95); 4.9 (td = 3.18; P > 0.99); 1.7% (td = 1.06; P & lt; 0.95); 0.5 (td = 0.33; P & lt; 0.95); 1.8 (td = 1.23; P & lt; 0.95); 0.7% (td = 0.43; P & lt; 0.95) and 0.3 (td = 0.68; P & lt; 0.95); 0.7 (td = 1.18; p & lt; 0.95); 0.4% (td = 1.05; P & lt; 0 , 95). In animals of the 3rd and 4th experimental groups, the index of dehydration is

108.6%, which is 8 (td = 5.97, p> 0.999) and 3.6% (td = 3.33; p> 0.99) greater than in the animals of the control group and the second experimental group. The loss index ranged from 89.3 (IV experimental group) to 90.7% (experimental group II). The coefficient of variation of the indexes of the structure of the body ranged from 1.94 (loss index, II experimental group) to 6.92 (index of bony, II experimental group). We believe that a significant difference in the coefficient of variation (4.98%) is due to the individual features of the exterior of the buds of improving genotypes. The results of the study of slaughter and meat properties of young pigs in experimental groups indicate that the significant influence of kennels of foreign origin was found on the following indicators: "slaughter output", the area of "muscle cell" and "weight of the rear third of the cooled semicircle" (Table. 2). The young pigs of the II and IV groups of experimental animals, the prevalence of pure-blooded peers and the control group in the faeces were 4,2 (td = 7,00; P> 0,9999), 1,5 (td = 3,57; P> 0,99) and 3.1% (td = 5.96; P> 0.99) (Table 1). The length of the chilled carcasses of the young pigs of the II and IV experimental groups exceeded the age group of the control group I by 1.6 (td = 1.05; P <0.95) and 3.2 cm (td = 3.04; P> 0.99).

1. Slaughter and meat properties of pigs of experimental groups, n=14, $\pm S_x$

Показник	Група			
	I	II	III	IV
Забійний вихід, %	68,9±0,38	73,1±0,47***	70,4±0,18**	72,0±0,37***
Довжина туші, см	94,6±0,78	96,2±0,75	94,5±0,55	97,8±0,71**
Товщина шпикю на рівні 6–7-го грудних хребців, мм	28,9±0,65	27,4±0,51	28,8±0,36	27,5±0,44
Площа «м'язового вічка», см ²	33,5±0,82	37,2±0,99**	35,5±1,01	37,0±0,98*
Маса задньої третини охолодженої півтуші, кг	9,8±0,17	10,6±0,22**	9,9±0,13	10,9±0,15***
* P>0,95; ** P>0,99; *** P>0,999 (до табл. 1 і 2).				

There was no significant difference between the animals of the 3rd experimental group and the control group in this indicator. In the area of the "muscle cell", the animals of the 2nd and 5th groups of experimental groups dominated the peers of the control group on average by 3.06 cm², or 3.38%. The maximum value of this characteristic was found in animals of the experimental group II - 37.2 ± 0.99 cm². Within the experimental groups, the difference in area of the "muscle cell" varied from 1.5 to 1.7 cm² and was

statistically unreliable.

2. Correlation between body structure indices and morphological indices of young carcasses of large white breed pigs

Показник		Біометричні показники	
Індекс будови тіла	Морфологічний склад туші	$r \pm Sr$	tr
Розтягнутості	Вихід:		
	м'яса	$-0,529 \pm 0,2642$	1,98
	сала	$0,329 \pm 0,2781$	1,18
	кісток	$0,611 \pm 0,2547^*$	2,40
Масивності	м'яса	$-0,589 \pm 0,2573^*$	2,28
	сала	$0,360 \pm 0,2765$	1,30
	кісток	$0,760 \pm 0,2307^{**}$	3,29
Збитості	м'яса	$0,496 \pm 0,2667$	1,86
	сала	$-0,336 \pm 0,2778$	1,21
	кісток	$-0,483 \pm 0,2678$	1,80
Глибоко-грудості	м'яса	$0,080 \pm 0,2858$	0,28
	сала	$-0,017 \pm 0,2862$	0,05
	кісток	$-0,337 \pm 0,2779$	1,20
Костистості	м'яса	$-0,387 \pm 0,2748$	1,40
	сала	$0,139 \pm 0,2848$	0,48
	кісток	$0,800 \pm 0,2217^{***}$	3,60

It has been established that the use of breeding buds of large white breeds of English, Danish and French origin contributed to an increase in the mass of the hindquarter of the cooled half-footed on average by 6.37%. The probable difference in the weight of the hindquarter of the cooled semicollis was found between the animals of the control group I and the third and the third experimental groups - 0.8 (td = 2.96; $P > 0.99$) and 1.1 kg (td = 5; $P > 0; 99$). The thickness of the spike at the level of 6-7 th thoracic vertebrae in animals of experimental groups ranged from 27.4 to 28.9 mm. Analysis of the morphological composition of carcasses shows that the highest yield of meat was in animals of the II experimental group - 60.2%. In the control group, III and IV, this indicator was 58 - 59.2%. Calculated coefficients of correlation between the body building index of young pigs and their meat properties were characterized by different directions, magnitude

and probability (Table 2). The maximum strength and direct bonds were detected between the index of deep-hole mortality ($r = 0.496$; $tr = 1.86$), the carcass length ($r = 0.443$; $tr = 1.63$) and the weight of the rear third of the cooled semipush ($r = 0.478$; $tr = 1,78$), as well as between the bone density index and the carcass length ($r = 0.419$; $tr = 1.53$). True correlation coefficients are established between the body structure indices and the indexes of the morphological composition of the carcasses for the following pairs of signs: stretch index \times bite output ($r = 0.611$; $tr = 2.40$); mass index \times meat yield ($r = - 0.589$; $tr = 2.28$), mass index $\times \times$ output of bones ($r = 0.760$; $tr = 3.29$); bone density index \times bone output ($r = 0.800$; $tr = 3.60$). The selective estimation of correlation relations between the body structure indices of pigs and the signs of their meat productivity is determined (Table 3). Data tab 3 indicate that with increasing strength of the relationship between the indices of the structure of the body and the meat properties of animals, and regardless of the direction of the correlation ratio, its probability increases. So, with regard to the gradation of the communication power in the category "0,400 and less", all identified correlation links were unlikely. In the category "0,410 - 0,700", the proportion of probable correlations between the indicators was 30% of the total, and in the category 0,710 and more than 100% of the connections were probable. The share of probable correlation relations was 11.7%, which confirms the thesis that the strength and probability of communication grows over time, if the signs that determine the correlation bonds are the subject of mass selection.

3. Коефіцієнти кореляції між індексами будови тіла свиней та ознаками їх м'ясної продуктивності

Значення, вірогідність, напрям	+ зв'язок		- зв'язок		Усього
	вірогідний	невірогідний	вірогідний	невірогідний	
0,400 і менше	–	11	–	12	23
0,410–0,700	1	5	1	2	9
0,710 і більше	2	–	–	–	2
Усього зв'язків	3	16	1	14	34
%	8,8	47,1	2,9	41,2	100

The calculated correlation between the slaughter and meat properties corresponded to the biological laws for this species of animals. The probability of a certain correlation between slaughter and meat properties was 71.4. Consequently, the results of our work indicate that the study of the body structure of young pigs is relevant. We consider it necessary to launch this zootechnical event in farms of the higher breeding category with the aim of obtaining for a further breeding of a young breed typical of the breed with high carcass quality potential.

Conclusions

It was established that the maximum indexes of body structure indices (stretching, massiveness, bony) were characterized by young pigs from sows of large white breed of Ukrainian breeding and breeding buds of large white breed of French breeding. The difference in these indicators, compared to the peers of the control group II and the third group, was 1.47%. The use of breeding horses of a large white breed of foreign breeding contributed to an increase in the slaughtered yield of 2.93%, an increase in the length of the chilled carcasses by 2.4 cm, the area of the muscular cell on 3,06 cm², the mass of the rear third of the cooled half-footed at 6, 37%. Calculations of the coefficients of pair correlation between the signs of development and the meat properties of young pigs indicate that maximum strength and direct bonds were detected between the index of deep-hysteresis, the mortality ($r = 0.496$; $tr = 1.86$), the carcass length ($r = 0.443$; $tr = 1.63$) and the weight of the rear third of the cooled half-footed ($r = 0.478$; $tr = 1.78$), as well as between the cartilage index and the carcass length ($r = 0.419$; $tr = 1.53$). For the purpose of early prediction of slaughter and meat properties of young pigs we propose the use of body structure indices: dehydration ($r = 0,443 - 0,496$) and chestnut ($r = 0,419$).

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