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COMPENSATORY GROWTH AND PIGLETS WEIGHT VARIABILITY WITHIN THE LITTER AS BREEDING CRITERIA FOR UKRAINIAN MEAT PIG BREED PERFORMANCE

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Aim. To determine the factors, affecting compensatory growth and performance of the Ukrainian meat (UM) pig breed. To analyze the impact of selection traits on the live weight of pigs during different age periods, using several growth and development indices. To determine compensatory growth by two groups of piglets (based on their individual weight, which was above the average mean piglet weight in the litter (M^+) or with a weight which was below average mean piglet weight in the litter (M^-), in relation to the average daily gain, ADG), in order to use these factors in a specific breeding program. **Methods**. Uniform microclimate conditions to rear experimental piglets were maintained using Eletor SC-12 (Poland) equipment. When selecting animals for research groups, physiological conditions were determined (by direct observation), age (according to primary zootechnical records), and live weight weighing on electronic scales (Axis (Ukraine) with a measurement accuracy of 0.02 Kg. The basis of our research was the live weight of pigs of Ukrainian meat breed, n = 381 animals. First two groups of piglets were formed (M^+; M^-) n = 143(M^+); n = 158(M^-); based on their individual weight, which was above the average mean piglet weight in the litter (M^+) or with a weight which was below average mean piglet weight in the litter (M^-). Furthermore, two groups were later formed based on presence or absence of compensatory growth (M^{++}, M^{+-}, M^{-+} and M^{--}) n = 66(M^{++}), n = 77(M^{+-}), n = 68(M^{-+}) and n = 90 (M^{--}). **Results**. The group M^{++} at the stage of rearing, at the age of 2–6 months, exhibited superior average daily gains by 22.2 % ($P < 0.001$) during the period from 2 to 4 months and by 8.8 % ($P < 0.01$) during the period from 4 to 6 months as compared to the other groups. An ANOVA analysis showed that the changes in weight gain of compensatory growth from 60 to 120 days affects the live weight of pigs at the age of 3–8 months ($P < 0.001$). The variability of piglet mean live weight in a litter at 60 days influenced the live weight of pigs at the age of 3–7 months ($P < 0.001$) and at the age of 8 months ($P < 0.05$), while the interaction between these two factors affects the live weight of piglets at the age of 3–5 months ($P < 0.001$) and 6 months ($P < 0.05$). **Conclusions**. New data have been obtained regarding the impact of piglet weight above or below the average mean piglet weight in the litter and the degree of compensatory growth in Ukrainian meat breed pigs on their average daily gains. Animals from group M^{-+} at 60 days of age, in the presence of compensatory growth, still outperformed their counterparts from group M^{+-} at 60 days of age by 22.2 % ($P < 0.001$) during the period from 2 to 4 months and by 8.8 % ($P < 0.01$) during the period from 4 to 6 months, when not exhibiting compensatory growth. The influence of the aforementioned factors was also determined on the growth rate from 2 to 6 months, with the growth rate index in the M^{++} group being 1.81 times higher than in the M^{+-} group and 1.54 times higher than in the M^{-+} group. The highest impact of litter composition on the average daily gain (ADG) in weight was observed at the age of 2–4 months (20.5 %; $P = 4.2 \cdot 10^{-12}$). Group compositions towards weight above piglet average weight in the litter and compensatory growth (M^{++}) have been shown to be useful as selection and breeding criteria for the Ukrainian meat pig breed and are possibly so for other pig breeds, which will be investigated in future.

Key words: litter adjustment indices, selection indices, growth parameters, piglets, live weight, early maturity, compensatory growth.

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INTRODUCTION

In recent pig breeding development, the issue of compensatory growth of piglets in the early stages of development in relation to optimalisation of production and health and husbandry receives more attention (Menegat et al, 2020; Camp Montoro et al, 2020; Ju et al, 2021; Zhang et al, 2021). Compensatory growth is a physiological response of an organism to negative effects of environmental stress factors. Therefore, the determination of stress factors, while rearing herd replacements, is important and will allow the managing of productive traits. These stress factors can have various origins, typically being a response to feed availability/restriction, which also encompasses the influence of the microbiome (Dmitriew et al, 2010; Zhang et al, 2021; Schiavon et al, 2018; Maltecca et al, 2019).

The compensatory growth phenomenon is rather well-studied in meat cattle breeding) and includes investigation of growth regulating proteomic factors (Mullins such as liver proteins, albumin, prealbumin or transthyretin and transferrin), as well as the impact of genetic factors on compensatory growth, performance, carcass traits, and metabolic hormone concentrations (Keogh et al, 2019; Keady et al, 2021).

As for pig breeding, compensatory growth is less studied, but there are studies on determination of the effect of compensatory growth on animal performance. For instance, Rao et al (2021) studied the effect of reduced dietary lysine (and some other amino acids) doses on reducing growth rate in order to stimulate compensatory growth in 90-kg pigs, in order to improve feed conversion and to reduce feeding costs.

Totafurno AD et al, 2019 studied the effect of a 3-week lysine-reduced diet (20–40 %) immediately after weaning and obtained similar body weight and composition after 6 weeks recovery as in the control group, substantially reducing feeding costs. The studies on White Large and Creole breeds (Poullet et al, 2019) have shown that the compensatory growth did not depend on a breed.

In a previous study (Pelykh and Chernyshov, 2014), the influence of compensatory growth on the breeding qualities of piglets with a weight above and below the average piglet weight in a litter. However, the relationship between live weight variability of piglets in a litter with compensatory growth has not been sufficiently studied.

The aim of the article was to determine whether the degree of compensatory growth and the degree of live weight variability within the litter (weight of piglet below or above individual piglet weight average in the litter) can be used as criteria for selecting piglets for a breeding herd.

MATERIALS AND METHODS

The study was conducted at the premises of the state enterprise "Experimental Farm Institute of Rice" in Skadovsky district of Kherson region. The basis of our research was the live weight of pigs of Ukrainian meat breed, n = 381 animals.

Pig growth was determined via individual weighing. The conditions of feeding and keeping were identical for all the groups of animals within each experiment and corresponded to zootechnic norms considering age, live bodyweight, and physiological state. The animals were fed 2 times a day with dry compound feed, balanced according to norms (Ibatullin et al, 2016).

The gender ratio of animals in groups was ♀50 % and ♂50 % (not castrated). The live weight of each animal was determined at birth and weaning during the second month, and also at the age of 3, 4, 5, 6, 7, and 8 months. The average daily gain (ADG) per month was determined from weaning by monthly measurements in month 2, 3 and 4 to monitor compensatory growth.

First two groups of piglets were formed (M^{+}; M^{-}) n = 143(M^{+}); n = 158(M^{-}); based on their individual weight, which was above the average mean piglet weight in the litter (M^{+}) or with a weight which was below average mean piglet weight in the litter (M^{-}) To determine compensatory growth, all pigs of M^{+} and M^{-} groups were divided into two new groups based on ADGs as determined from weaning up top 4 months and further measured up to eight months This division lead to the possibility to determine compensatory growth in piglets with a weight above average piglet weight in the litter (M^{++}, M^{+-}) n = 66(M^{++}), n = 77(M^{+-}) and those with a weight below average piglet weight in the litter (M^{-+}, M^{--}) n = 68(M^{-+}), n = 90(M^{--}).

The following indices were determined: changes in weight gain (Δt), indices of growth rate (Ii), and uni-formity (Iu) according to V.P. Kovalenko (Sukhno, 2022)

$$I_i = \frac{\Delta t}{RG} \times ADG, \quad (1)$$

$$I_u = \frac{1}{1 + \Delta t} \times ADG, \quad (2)$$

where Δt –changes in weight gain (%); RG – relative weight gain for the period of 2–6 months, %; ADG – average daily weight gain for the period of 2–4 months, g.

The normality assumption of the data was examined with the Shapiro–Wilk test, and it was determined that the data were normally distributed (P > 0.05). In the next stage of the study, we estimated the effect of variation of weight of a piglet above or below average and ADG in month 2–4 (and their combination) on live weight in different age periods up to eight months using a two-way ANOVA. Statistica 10 (StatSoft, EU) was utilized for data processing. The arithmetic mean values and standard errors (x ± SE) are given in Table 1 and 3. To evaluate the proportion of intergroup to intragroup variability, Fisher's F-test was applied Tukey's HSD test was used to test for significant differences in multiple comparisons. At P < 0.05, differences were considered significant.

RESULTS

We found a dependence between the growth rate of piglets and their place in a group consisting of piglets with a weight below average or in a group above average on one hand and compensatory growth on the other hand during the age period of 2 to 4 months. The animals under comparison had a sufficient growth rate (**Table 1**).

The live weight of the Ukrainian meat pig breed showed significantly higher values at the age from three to seven months in group M^{++}). At the age of four months, the pigs of group M^{-+} showed compensatory growth as determined by an increased growth rate. In this period, their live weight was 2.4 kg higher than those from group M^{--} and 1.0 kg than those of group M^{+-}. The lowest live weight at the age of six months was noted for pigs of group M^{--}; the difference with animals of group M^{++} was 6.56 kg or 8.80 %.

The established difference was preserved in the subsequent periods of growth up to 8 months. Based on our present (and past) findings we conclude that from the four groups, three (M^{++}, M^{+-}, M^{-+}) of them (showing compensatory growth) could be used for further breeding, instead of only one (M^{++}), when only ADG was taken into account. In the four-group scenario only group M^{--} now should be intended for commercial use and finishing instead of three groups (M^{+-}, M^{-+} and M^{--}).

The results of an ANOVA performed to determine the effect size of variation in live weight, conditioned by division into tow litter groups and compensatory growth are presented in **Table 2**.

The obtained values of average daily gain (ADG) and relative gain (RG) are mostly used to characterize the regularities of growth and development, and the dynamics of live weight gain of piglets (**Table 3**).

The animals kept in the group M^{-} litters, in the presence of compensatory growth, were characterized by a slower growth rate (Table 3) compared to those originating from litters with low variability of live weight within the litter by 22.2 % (P < 0.001) in the period from 2 to 4 months and by 8.8 % (P < 0.01) in the pe-

Table 1. The dynamics in the live weight of pigs, determined to detect possible compensatory growth (x ± SE)

Age of animals	Live weight, kg				Average in herd n = 120
	M^{++*}	M^{+-}	M^{-+}	M^{--}	
At birth	1.12 ± 0.17 ^{b}	1.15 ± 0.18 ^{b}	1.15 ± 0.18 ^{b}	1.15 ± 0.20 ^{b}	1.15
2 months	16.91 ± 1.97 ^{b}	16.51 ± 1.53 ^{b}	16.42 ± 1.25 ^{b}	16.23 ± 1.79 ^{b}	16.36
3 months	31.68 ± 0.38 ^{a}	28.00 ± 0.23 bc	28.39 ± 0.22 ^{b}	27.45 ± 0.24 ^{c}	29.09
4 months	47.93 ± 1.15 ^{a}	41.00 ± 0.32 ^{b}	42.00 ± 0.31c	39.59 ± 0.52 ^{d}	43.02
5 months	63.52 ± 1.66 ^{a}	57.36 ± 1.48 ^{bc}	59.00 ± 1.24 ^{b}	55.05 ± 1.12 ^{c}	58.93
6 months	81.07 ± 1.32 ^{a}	75.94 ± 1.8 ^{bc}	76.95 ± 0.68 ^{b}	74.51 ± 0.65 ^{c}	76.94
7 months	97.91 ± 1.55 ^{a}	92.89 ± 1.77 ^{b}	93.75 ± 1.85 ^{ab}	91.69 ± 1.52 ^{b}	94.07
8 months	114.30 ± 1.17 ^{a}	110.80 ± 1.04 ^{bc}	112.80 ± 1.40 ^{ab}	108.00 ± 1.22 ^{c}	111.24

Note. Different letters within each row indicate significant differences between groups according to the Tukey's HSD test results; * for group composition see Material and Methods.

Table 2. ANOVA results, including effect size of the variance, established for some factors influencing live weight of pigs

Variance factors	Calculated P value	Effect size (η), %	Calculated P value	Effect size (η), %
	at birth		at 2 months	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	0.367	0.15	0.637	0.09
2. Compensatory growth	0.323	0.13	0.076	1.26
3. Interaction of 1 and 2	0.435	0.18	0.172	0.75
4. Error	–	99.49	–	98.36
Variance factors	at 3 months		at 4 months	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	$2.8*10^{-8}$	8.34	$8.8*10^{-11}$	16.31
2. Compensatory growth	$4.2*10^{-9}$	12.07	$1.2*10^{-14}$	26.44
3. Interaction of 1 and 2	$2.1*10^{-4}$	4.24	$3.1*10^{-7}$	6.17
4. Error	–	73.79	–	48.91
Variance factors	at 5 months		at 6 months	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	$5.3*10^{-9}$	12.32	$2.7*10^{-5}$	6.00
2. Compensatory growth	$2.3*10^{-14}$	26.97	$9.3*10^{-8}$	11.18
3. Interaction of 1 and 2	$1.6*10^{-3}$	1.29	0.039	1.42
4. Error	–	60.15	–	81.09
Variance factors	at 7 months		at 8 months	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	$7.94*10^{-4}$	4.07	0.024	1.92
2. Compensatory growth	$1.22*10^{-5}$	7.07	$1.95*10^{-5}$	7.07
3. Interaction of 1 and 2	0.062	1.24	0.498	0.17
4. Error	–	87.22	–	92.03

Table 3. The dynamics of live weight gain in piglets (x ± SE)

Index	M^{++}	M^{+-}	M^{-+}	M^{--}	Average in herd
2–4 month					
ADG, g	525.1 ± 8.01 ^{a}	408.2 ± 3.58 ^{b}	429.6 ± 2.12 ^{c}	377.9 ± 5.07 ^{d}	444.2 ±.78
RG, %	97.9 ± 1.49 ^{a}	85.2 ± 0.75 ^{b}	88.6 ± 0.43 ^{c}	80.4 ± 1.08 ^{d}	89.4 ± 0.76
4–6 month					
ADG, g	538.7 ± 4.67 ^{a}	495.2 ± 4.27 ^{bc}	506.0 ± 5.14 ^{b}	480.02 ± 6.66 ^{c}	504.7 ± 2.68
RG, %	132.7 ± 1.15 ^{a}	128.4 ± 1.10 ^{bc}	130.2 ± 1.32 ^{b}	125.9 ± 1.75 ^{c}	129.6 ± 0.69

Note. Different letters within each row indicate significant differences between groups according to the Tukey's HSD test results. ADG – average daily gain of live weight; RG – relative gain of live weight.

riod from 4 to 6 months. During the period from two to four months, there was a tendency toward the increase in the ADG in the animals of group M^{-+}, and they exceeded their analogues without the compensatory growth (group M^{--}) by 51.7 g ($P < 0.001$).

The results of an ANOVA performed to determine the effect size of variance in ADG from 2–4 months and from 4–6 months as influenced by factors of piglet weight below or above average of the litter weight and compensatory grow and their interaction is presented in **Table 4**.

Table 4. ANOVA results, including effect size of the variance, established for some factors influencing the average daily gain (ADG) of piglets

Variance factors	Calculated P	Effect size (η), %	Calculated P	Effect size (η), %
	ADG from 2 to 4 months		ADG from 4 to 6 months	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	$4.2*10^{-12}$	20.05	$8.1*10^{-6}$	6.60
2. Compensatory growth	$2.5*10^{-15}$	36.05	$7.1*10^{-10}$	13.89
3. Interaction (1 = 2)	$4.6*10^{-5}$	5.41	0.099	0.88
4. Error	–	37.00	–	78.83

Table 5. The indices of changes in weight gain and growth rate of pigs in early ontogenesis, units

Index	M^{++}	M^{+-}	M^{-+}	M^{--}	Average
Changes in weight gain Δt	0.463	0.255	0.300	0.192	0.327
Uniformity index, Iu	0.369	0.395	0.390	0.403	0.382
Index of growth rate, Ii	1.610	2.891	2.292	3.736	2.381

Table 6. ANOVA results, including effect size of the variance, established for some factors influencing growth (changes in weight gain, growth rate and uniformity)

Variance factors	Calculated P	Effect size, %	Calculated P	Effect size, %	Calculated P	Effect size, %
	Changes in weight gain, Δt		Uniformity index, Iu		Index of growth irate, Ii	
1. Litter group below (M^-) or above (M^+) average piglet weight in litter	0.024	18.10	$3.0*10^{-5}$	5.73	0.475	2.78
2. Compensatory growth	$1.9*10^{-5}$	35.24	$8.1*10^{-7}$	18.27	0.142	5.24
3. Interaction of 1 and 2	0.498	3.55	0.649	0.07	0.710	0.63
4. Error	–	42.68	–	78.37	–	91.22

The largest effect size on the investigated indices could be attributed to compensatory growth. The factor of group division, had the largest effect force in terms of the ADG at the age of 2 to 4 months. The growth indices of the experimental piglets of the Ukrainian meat pig belonging to the four studied groups based on division of piglets in groups above or below average litter weight and on presence or absence of compensatory growth, are presented in **Table 5**.

Strong changes in weight gain were notable for two groups M^{++}, M^{-+}, which had the highest growth rate at the age of 4 months (0.463–0.300 units), pigs in group M^{+-} and M^{--} n had 0.255–0.192 units lower values for this index.

That is, with the transition to independent feeding, the difference in weight between animals from the M^+ and M^- groups did not tend to get even but increased instead. Regarding growth uniformity, the animals of group M^{++} had a value of 0.369 which demonstrated smaller dependence for this group of growth rate on environmental factors. It showed that the period of active growth for the pigs of group M^{++} was characterized by a sharp increase in the rate of average daily gains, whereas in animals of group M^{+-} and M^{--} there was high uniformity of the growth, which led to no compensatory growth.

The animals of experimental groups had some differences in relative growth rate in following age periods. There were almost similar live weight indices of pigs from different groups when measured at six months due to different growth intensities observed. ANOVA results, including effect size of the variance, established for some factors influencing growth (changes in weight gain, growth rate and uniformity) are presented in **Table 6**.

The largest effect size on the investigated indices could be attributed to compensatory growth. The factor of group division, had the largest effect force in terms of the ADG at the age of 2 to 4 months. The growth indices of the experimental piglets of the Ukrainian meat pig belonging to the four studied groups based on division of piglets in groups above or below average litter weight and on presence or absence of compensatory growth, are presented in Table 5.

Among the investigated traits, the largest effect size was noted for compensatory growth, from 5.24 % (Index of growth rate) to 37.23 % (Changes in weight gain). Based on the ANOVA results it can be concluded that compensatory growth and weight of piglets above or below the average individual piglet weight in the litter average were conditioned by changes in weight gain.

DISCUSSION

The investigation of litter composition (size and evenness, individual weight of piglets at birth and in later pre-weaning stages) and its genetic background and of compensatory growth during early growth phases (Pelykh and Chernyshov, 2014) has been shown to be supportive of finding new directions of pig selection (Klein et al, 2018; Kapell et al, 2011).The results of our studies are in line with those of Feldpausch et al (2019) and Jankowiak et al (2020), who established that piglets with higher birthweight survive and grow better than those with a low birth weight. Additionally, we supposed that a stronger compensatory growth of piglets with a weight below-litter average can be explained by environmental factors such as accessibility to sow tits availability. Our data again established that indeed compensatory growth in this group takes place, although to much less extend as in the group of piglets with a weight above litter average weight.

Our study showed that after weaning and transition of piglets to independent feeding, the difference in live weight between both weight groups further increased. It may be explained by the fact that the gain in piglets both prior and after weaning is largely conditioned by individual specificities of animals. It confirms the conclusions of Damgaard et al (2003), that breeding for improvement of within-litter variation in birth weight is possible and in combination with breeding for the production of homogenous litters by sows could lead to higher piglet survival higher growth rate of piglets and higher homogeneity of litters at weaning. It is now definitively shown in our research that compensatory growth is strongest in the group of piglets with a weight above the average piglet weight in litter as was also found by Yun and Valros (2015); Voitenko et al (2019); Zhang et al (2016); Su et al (2007). But we also showed that compensatory growth is clearly present in the group of piglets with a weight below average piglet weight in litter, which shows the potential, under the proper feeding and housing conditions, to make use of this group for breeding purposes as well. It should be remarked however, when breeding programs are widened to include other selection traits such as performance, newborn death rate, resistance to diseases, product quality and fertility, may positively or negatively interfere with the specific traits we studied in the present research, which was noted by other researchers as well (Guy et al, 2012; Foxcroft et al, 2016; Zhang et al, 2016; Su et al, 2007).

CONCLUSIONS

The study determined the possibility of using piglet group composition (towards a weight above the average of individual piglet weight in litter at birth and at weaning) and compensatory growth in the following 2–4 months as factors in breeding and in finishing young pigs for herd replacement and further commercial purposes.

The largest effect size of piglet group composition towards weight above the average weight of the litter (M^{++}) on ADG was seen at the age of 2–4 months (20.5 %). During the same period, there was also a tendency towards the increase in the ADG in the animals of group M^{-+}, which originated from a group composed of animals with a weight below the average of individual piglet weight in litter (M^{-+}). They showed compensatory growth as well, and the animals of group M^{--}, without the compensatory growth with 51.7 g.

The largest effect size of compensatory growth (26 %) on the level of live weight variance in the M^{++} group was noted at four months. From the age of 5 to 8 months, this impact was decreasing, but it was still significant in all cases.

Strongest changes in weight gain (0.463–0.300) were notable for two groups M^{++}, M^{-+}, which had the highest growth rate at the age of 4 months. Animals from the other two groups (M^{+-}, M^{--}) were inferior to them by 0.25–0.192.

Group compositions towards weight above average piglet weight in litter and compensatory growth have been shown to be useful as selection and breeding criteria for the Ukrainian meat pig breed and are possibly so for other pig breeds, which will be investigated in future.

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Мета. Визначити фактори, що впливають на компенсаторний ріст і продуктивність свиней української м’ясної породи. За індексами росту і розвитку проаналізувати вплив селекційних ознак на показники живої маси свиней у різні вікові періоди. Визначити компенсаторний ріст за двома групами молодняку (на основі індивідуальних показників їхньої маси, яка була вищою (M^{+}) або нижчою від середньої маси середнього поросяти в гнізді (M^{-}) стосовно середнього приросту, з метою використання цих факторів у спеціальній селекційній програмі. **Методи.** Умови однорідного мікроклімату для вирощування молодняку під час експерименту підтримувались за використання обладнання Eletor SC-12 (Польща). При відборі тварин для груп дослідження враховували їхній фізіологічний стан (шляхом прямого спостереження), вік (за первинною зоотехнічною документацією), та живу масу (шляхом зважування на електронних вагах (Axis, Україна), похибка вимірювань – 0.02 кг. Матеріалом дослідження були дані живої маси свиней української м’ясної породи n = 381 тварина. Було сформовано перші дві групи молодняку (M^{+}; M^{-}) n = 143(M^{+}); n = 158(M^{-}) на основі їхньої індивідуальної маси, яка була вищою (M^{+}) або нижчою (M^{-}) від середньої маси середнього поросяти в гнізді. Крім того, пізніше було сформовано дві групи на основі наявності або відсутності компенсаторного росту (M^{++}, M^{+-}, M^{-+} та M^{--}) n = 66(M^{++}), n = 77(M^{+-}), n = 68(M^{-+}) and n = 90(M^{--}). **Результати**. На етапі вирощування молодняка у віці 2–6 місяців група M^{++} продемонструвала на 22,2 % вищий середньодобовий приріст ($P < 0,001$) впродовж періоду від 2 до 4 місяців та на 8,8 % ($P < 0,01$) – впродовж періоду від 4 до 6 місяців порівняно з іншими групами. Аналіз ANOVA показав, що зміни у прирості маси за компенсаторного росту від 60 до 120 днів впливають на показники живої маси свиней у віці 3–8 місяців ($P < 0,001$). Мінливість показників середньої живої маси поросят у гнізді у віці 60 днів впливала на живу масу свиней у віці 3–7 місяців ($P < 0,001$) та у віці 8 місяців ($P < 0,05$), а взаємодія між цими двома факторами впливала на живу масу молодняку у віці 3–5 місяців ($P < 0,001$) та 6 місяців ($P < 0,05$). **Висновки**. Було отримано нові дані щодо впливу маси молодняка, що є вищою або нижчою від середньої маси середнього поросяти в гнізді, та ступеню компенсаторного росту у свиней української м’ясної породи на їхній середньодобовий приріст. За наявності компенсаторного росту тварини з групи M^{-+} у віці 60 днів досі показували на 22.2 % ($P < 0,001$) кращі показники продуктивності, ніж тварини з групи M^{+-} у віці 60 днів, впродовж періоду від 2 до 4 місяців, та на 8,8 % ($P < 0,01$) кращі показники впродовж періоду від 4 до 6 місяців, коли вони не демонстрували компенсаторного росту. Також було встановлено вплив вищезазначених факторів на приріст від 2 до 6 місяців, причому показник приросту в групі M^{++} був у 1,81 рази вищим, ніж у групі M^{+-} та в 1,54 рази вищим, ніж у групі M^{-+}. Найвищий вплив складу гнізда на середньодобовий приріст маси спостерігали у віці 2–4 місяців (20,5 %; $P = 4,2*10^{-12}$). Було продемонстровано корисність таких ознак, як склад груп у розрізі маси, вищої від середньої маси середнього поросяти в гнізді, та компенсаторного росту (M^{++}) для використання в якості критеріїв селекції та розведення свиней української м’ясної породи і, можливо, інших пород свиней, які можуть бути досліджені в майбутньому.

Ключові слова: показники вирівняності гнізда, селекційні індекси, параметри росту, молодняк свиней, жива маса, скоростиглість, компенсаторний ріст.

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