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

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Abstract

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*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.

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