QUALITY INDICATORS OF YOUNG PIGS MEAT AT DIFFERENT MIXTURES

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ПОКАЗНИКИ ЯКОСТІ М'ЯСА МОЛОДИХ СВИНЕЙ ПРИ РІЗНИХ СУМІШАХ

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Meat Animal productivity is determined by factors such as genotype and environment. influence hereditary qualities and environmental conditions Animal development occurs differently : at different physiological stages of its development their pace formation different . They are significantly to the extent depend from intensity metabolism in the body . In nature influence genetic and paratypic factors into individual economically useful signs traced clear regularity that is expressed in the following: than The greater the influence of paratypical factors , the higher degree genotype−environment interactions (Bankovska and al., 2015; Kovalchuk, 2022)

At the forge indicate that same relationship muscle , fat and bone tissue during pig slaughter are determined not only age , gender , size of the final alive masses at the stage completion fattening , type of fattening , but also the size of more valuable parts carcass and by composition and ratio in it meat , fat and bones . Quantity in the carcass muscle and fat fabrics , as well as their qualitative indicators are suitable changes under influence selection (Bankovska, 2003; Bankovska, 2015; Bankovska, 2016).

The level of slaughter and meat-fat qualities largely determines the efficiency of pork production. This issue is of particular importance in the comparative assessment of pigs of different productivity directions, as it allows determining the most significant factors influencing the formation of these qualities (Balatsky and al., 2016).

Therefore, the topic of the research conducted is quite relevant at the current stage of development of the pig farming industry.

The aim of the research was to find out the impact genotype on the qualitative and quantitative indicators of meat productivity of young pigs, as well as the effectiveness of their use in the conditions of the Black Sea region.

To study the meat qualities of young animals according to the principle of analogues, 6 experimental groups were formed, one of which (I) was the control (purebred young animals of the Large White breed of Hungarian selection), and II, III, IV, V, VI were combinations of sows of the Large White breed of Hungarian

selection with boars of the Large White breed of English selection, the Red White-belted breed, as well as the Duroc, Landrace and Pietren breeds.

Similar feeding and housing conditions were created for the animals of the experimental groups. The scientific and economic experiment was conducted under conditions of full feeding.

We studied the influence of breed on the meat quality of pigs. It was established that all studied combinations were characterized by a sufficiently thin fat – 11.5…17.6 mm. This gives grounds to use pigs of the Large White breed of Hungarian selection in the system of crossings to increase the meatiness of carcasses. The highest indicators of slaughter yield, fat thickness, area of "muscle eye" and ham mass were characterized by animals of the VI experimental group combination, they significantly outperformed the young animals of the control group and III, IV and V experimental groups in terms of slaughter yield by 3.3% (P>0.99), 0.6% (P>0.95), 2.7% and 2.2%, respectively; in terms of fat thickness – by 0.6 mm, 6,1 mm, 5.3 mm, 1,9 mm and 3.0 mm; by the area of the "muscle eye" – by 4.6 cm^2 (P>0.95), 4.0 cm^2 , 9.8 cm^2 , 2.4 cm^2 and 2.1 cm^2 . By the mass of the ham, the largest the difference between control and treated animals VI experimental groups, which amounted to 0,7 кг. But according to this indicator, the difference was incredible across all experimental groups.

In terms of half-carcass length, the best indicators were those of animals V experimental group (98,4 cm) and purebred piglets of the Large White breed of Hungarian selection (97,9 cm). According to this indicator, animals of II, III, IV and VI experimental groups were inferior to the young animals of the control group by 2,8 cm, 3.1 cm (P>0.95), 2,2 cm and 2,1 cm. Animals of III experimental group were distinguished by the shortest carcasses (94,8 cm).

The study of the morphological composition of pig carcasses of different genotypes allowed us to establish that animals of the VI experimental group (64.18%) were characterized by a rather high meat content, which exceeded the young animals of the control group by 3.06% (P>0.99).

In terms of meat content in the carcass, the experimental young animals of groups IV and V were superior to the purebred young animals of the control group by 1.85% and 2.09%, respectively (P>0.95). The opposite pattern was established in terms of fat content – animals of groups IV, V and VI were inferior to the young animals of the control group by 1.76% (P>0.95), 1.73% (P>0.95) and 2.99% (P>0.99), respectively. In terms of the ratio "meat:fat", no differences were established between the crossbred animals of the experimental groups, it was at the level of 1:0.35...1:0.45.

Along with this, we estimated the mass of cuts in half-carcasses of experimental animals based on a live weight of 100 kg.

There was no statistically significant difference between the mass of most similar cuts in the carcasses of pigs of different experimental groups. The exception was the mass of the hind leg. Thus, animals of the VI experimental group significantly exceeded the young animals of the control group

by 0,95 kg (P>0.95).

Therefore, the results presented give grounds to state the possibility of using crossbred animals with high meat and bacon qualities. This especially applies to animals of the IV, V and VI experimental groups.

The nutritional value of carcasses is determined not only by the quantitative indicators of meat productivity, given in the previous table, but also by their qualitative composition, namely proteins , fats, carbohydrates, mineral elements and vitamins (Tunikovska, 2010).

In addition, the qualitative composition of carcasses is characterized by such physicochemical indicators as acidity, color, moisture-holding capacity, tenderness, and marbling. They are capable of undergoing sharp changes and fluctuate depending on internal and external factors, which include breed, age of animals, level and type of feeding, conditions of keeping and slaughter.

Due to the fact that the increase in meatiness of carcasses is closely related to the deterioration of meat quality and the manifestation of PSE and DFD defects, we studied the qualitative indicators of meat of the longest back muscle at the level of 9…12 vertebrae. It was established that an important indicator of meat quality is the value of active acidity (*pH*), the level of variability of which indicates different intensity of glycogen breakdown in muscle tissue after slaughter of animals. A rapid decrease in the pH of meat after slaughter of animals leads to the fact that it becomes acidic even before cooling, and this causes denaturation of proteins, reduces their moisture capacity and the meat becomes pale, soft, exudative (Kovalchuk, 2022).

The active acidity of high-quality pork meat is 5.2…6.0 (Melnyk and al., 2020) . According to the results of our studies, the active acidity of meat of animals of the experimental groups was within 4.5…6.0. At the same time, the lowest values of active acidity were found in animals of the II and III experimental groups, which indicates a tendency to worse meat storage. Thus, the difference between animals of the control and II and III experimental groups was 1.0 (P>0.95) and 1.5 (P>0.99), respectively.

Active acidity *pH* is closely related to moisture-holding capacity. This indicator determines the tenderness of meat, as well as juiciness and technological qualities of pork. The greater the moisture-holding capacity of a protein molecule, the stronger the meat binds water, and hence the less it loses during thermal and culinary processing. Meat with a reduced moisture-holding capacity is less suitable as a raw material for the food industry (Ivanenko, 2016). A greater amount of bound water was in the meat of animals of the III and V experimental groups. Thus, the difference between them and the animals of the control group was 3.6% and 3.7%, respectively, but was insignificant. The young animals of the VI experimental group were characterized by the lowest moisture-holding capacity (57.0 %), which is 3.2 % less than the animals of the control group.

Along with this, we investigated the chemical parameters of pig meat in various combinations.

The total moisture content of all experimental groups was within 72.5…75.3%. The difference was found between the animals of the control and the III experimental group, which was 2.48% (P>0.95), respectively. The animals of the above-mentioned group had the lowest dry matter content compared to the purebred young animals of the Large White breed of Hungarian selection, respectively by 2.48 % (P>0.95), as well as the lowest protein content, respectively by 1.44%.

No significant differences were found in the fat and protein content of pigs in the experimental groups. The ash content of all studied combinations ranged from 0.91 to 1.96%. According to this indicator, a significant difference was found between the animals of the control group and the experimental groups. Thus, it was 0.79% (P>0.99), 0.74% (P>0.99), 0.98% (P>0.99), 0.52% (P>0.95) and 1.05% (P>0.99), respectively.

Thus, the meat of young pigs of the Large White breed of Hungarian selection and their combinations in terms of physical and chemical indicators meets the requirements for high-quality pork and its processing at food industry enterprises. The highest indicators of meat qualities were characterized by animals of the VI experimental group of the combination of sows of the Large White breed of Hungarian selection with boars of the Pietren breed . This provides grounds for using pigs of the Large White breed of Hungarian selection in the system of crossing to increase the meatiness of carcasses.

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