MEAT PRODUCTIVITY OF "COBB-500" CROSS BROILER CHICKENS

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Abstract: *This study investigates the meat productivity of "Cobb-500" cross broiler chickens reared on diets supplemented with varying levels of silkworm pupae (Group I – 0%, Group II – 5%, Group III – 10%, and Group IV – 15%). Based on the experimental findings, corresponding conclusions on slaughter yield and live weight dynamics have been formulated.*

Keywords: *Cobb-500, cross, meat productivity, live weight, slaughter weight, slaughter yield.*

INTRODUCTION

The meat quality of modern broiler crosses, particularly the development of the high-value breast muscle, varies significantly depending on the feeding regime, sex, and slaughter age of the "Cobb-500" cross broiler chickens.

The maturation rate of broilers is closely linked to their growth intensity and sex. According to certain studies [1, 2], the live weight of male broilers at 8 weeks of age is 20–25% higher than that of females, while feed consumption per kg of live weight gain constitutes 9.5–10%. Concurrently, sexual dimorphism in live weight at 42 days of age favors male broilers by 17%, with their feed expenses per unit of live weight gain being 6.0% lower [3].

Materials and Methods. The scientific research was carried out at the experimental mini-farm of the Nukus Branch of Samarkand State University of Veterinary Medicine, Livestock and Biotechnologies. For the experiment, day-old broiler chicks were procured from the "Sunlight Servis" private enterprise (headed by T.X. Ro'zmetov), located in the Urgench district of the Khorezm region, Republic of Uzbekistan.

The live weight dynamics of the "Cobb-500" cross broiler chickens were monitored and recorded daily at a fixed time for 37 days utilizing an "Electronic Scale SOF-40A". Meat productivity parameters were evaluated according to the VNITIP methodology (2001) and conducted in strict compliance with the state quality standards GOST 7702.00-74, 7702.1-74, and 22237-75.

Results and Discussion. At present, the rearing period for broiler meat production from modern crosses has substantially shortened, which underscores their rapid growth rates. However, under specific production conditions, extending the broiler rearing period can be economically viable. This viability stems from minimizing additional expenditures

associated with purchasing floor litter materials, preparing chick cages, and consuming electricity and heating for new batches of young chicks.

Given these considerations, it is imperative to identify the optimal balance of parameters such as final live weight, meat quality, growth period, and production efficiency, based on the biological characteristics of a specific broiler cross.

At the end of the rearing period, 10 broilers from each group ($n=10$) were randomly selected to undergo a control slaughter. Slaughter indicators serve as the primary criteria that determine not only the fattening efficiency of the dietary ration but also the economic profitability of the final processed product (meat) yield. The experimental data collected during the study are outlined in Table 1.

Table 1

Slaughter yield and live weight indicators

Indicators	Group, (n=10)			
	I	II	III	IV
Pre-slaughter live weight, g	2464,9±4,88	2685,2±11,13*	2517,6±9,73***	2278,5±7,58***
Slaughter weight, g	1942,3±1,56	2166,9±2,05***	1978,8±1,34***	1797,7±1,05***
Slaughter yield, %	78,8	80,7	78,6	78,9

*P<0,05; ***P<0,001

As demonstrated in Table 1, the slaughter yield was calculated as the percentage ratio of the slaughter weight to the pre-slaughter live weight. This parameter amounted to 78.8% in Group I, 80.7% in Group II (+5% SWP), 78.6% in Group III (+10% SWP), and 78.9% in Group IV (+15% SWP). The slaughter yield in Group II was noticeably higher than in all other experimental groups.

The average pre-slaughter live weight in Group I (Control) was 2464.9 ± 4.88 g. The highest live weight value was registered in Group II, reaching 2685.2 ± 11.13 g ($P < 0.05$), which exceeded the control group by 220.3 grams. In Group III, the average live weight stood at 2517.6 ± 9.73 g ($P < 0.001$); although slightly higher than the control, it was significantly lower than Group II. The lowest pre-slaughter weight was observed in Group IV, standing at 2278.5 ± 7.58 g ($P < 0.001$), which was 186.4 grams less than the control group.

Regarding slaughter weight, Group II (5% supplementation) achieved 2166.9 ± 2.05 g ($P < 0.001$), which is 224.6 grams higher compared to the control group (1942.3 ± 1.56 g). In Group III, this indicator was 1978.8 ± 1.34 g ($P < 0.001$), whereas a sharp decline in meat yield was observed in Group IV, dropping to 1797.7 ± 1.05 g ($P < 0.001$).

Slaughter yield is one of the important economic and biological indicators evaluating the efficiency of poultry meat production. This indicator represents the proportion of body weight taken relative to live weight.

The results of the study showed that the introduction of caterpillars into the diet has a different effect on the slaughter yield.

This difference can be clearly seen in Figure 1.

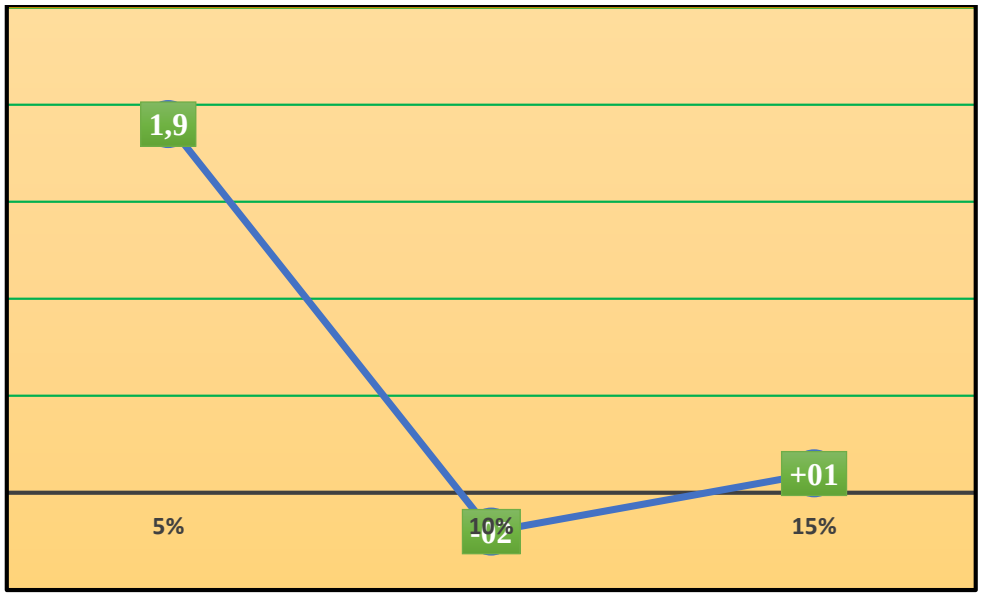

Figure 1. Difference in slaughter yield compared to the control group, %

As seen from the data in Figure 1, the highest result was observed in the group receiving 5% supplementation (+1.9%). This condition can be explained by the presence of proteins of high biological value in the caterpillar, a good balance of amino acids, improved digestibility of feed, and accelerated development of muscle tissue. As a result, an increase in muscle mass was observed in the chicks, and the slaughter yield significantly improved. When applied in an amount of 10%, the slaughter yield decreased by 0.2% compared to the control group. Although this decrease was not substantial, it may be linked to changes in the ratios of certain nutrients as the proportion of pupae in the diet increased. When 15% pupae were added, the slaughter yield once again showed a positive result (+0.1%). However, this figure is considerably lower than the result from the 5% group.

This situation indicates that the chicks' organisms have adapted to a certain extent to a high amount of pupae, but increasing the supplemental amount did not provide a significant advantage in slaughter yield.

Conclusion.

The results of the study indicate that dietary supplementation with silkworm pupae significantly influences broiler performance.

Compared to the control group, the slaughter yield of broilers in Group II (+5% SWP) was 1.9% higher, whereas Group III (+10% SWP) demonstrated a 0.2% decrease, and Group IV (+15% SWP) showed a marginal increase of 0.1%. Thus, a 5% inclusion rate of silkworm pupae is optimal for maximizing meat productivity in "Cobb-500" cross broilers.

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