



УДК 636.22/.28. 082.033.2.17. 2.11.

**PRODUCTIVITY OF BUGAIERS OF DIFFERENT BREEDS AND THEIR MIXTURE AT AVERAGE LEVEL OF FEEDING IN CONDITIONS OF THE FOREST-STEPPE ZONE OF THE BUKOVYNA REGION****ПРОДУКТИВНІСТЬ БУГАЙЦІВ РІЗНИХ ПОРІД І ЇХ ПОМІСЕЙ ПРИ СЕРЕДНЬОМУ РІВНІ ГОДІВЛІ В УМОВАХ ЛІСОСТЕПОВОЇ ЗОНИ РЕГІОНУ БУКОВИНИ****Kalynka A.K. / Калинин А.К.***Candidate of Agricultural Sciences,**Agricultural Experimental Station of Institute of Agriculture of**Carpathian Region of NAAS**Буковинська державна сільськогосподарська дослідна станція Інституту сільського господарства Карпатського регіону Національної академії аграрних наук України***Prylipko T.M. / Приліпко Т.М.,***d.a.s., prof. / д.с.н., проф.**Higher education institution Podolsk State University, Kamianets-Podilskyi, Shevchenko, 13, 32300**Заклад вищої освіти Подільський державний університет**ORCID: 0000-0002-8178-207X*

**Abstract.** The proposed article describes the productivity of ruminants of different breeds and their crossbreeds at an average level of feeding in the conditions of the forest-steppe zone of the Carpathian region of Bukovyna. Thus, the results of the research indicate that Bukovyna zonal-type bulls of the Simmental beef cattle breed prevailed by 134g (19.4%) more than their peers - analogs II - black and spotted breed of the milk productivity direction. According to the results of the control slaughter, Bukovyna zonal-type meat Komologo Simmental bulls had a carcass weight of 218.5 kg, which is 32.0 kg (17.1%) more compared to peers - analogues of the black-spotted breed with a slaughter yield at the age of 15 months - obtained from Bukovyna zonal-type beef cattle Simmental - by 5.5% more compared to similar animals of the black and spotted dairy breed. According to indicators of pre-slaughter weight at the age of 15 - months, the best were the bulls of the meat Komologo Simmental cattle. This indicator in them was on average 461.0 kg, which is significantly greater than that of peers of the Bukovinian type of meat Komologo Simmental (1/2 x 1/2 black-and-white) by 3 kg and 16 kg, respectively. It was established that the difference in the protein content of Bukovyna zonal-type Bukovinian beef cattle of 50% x 50% Simmental was higher than that of peers of the black-spotted breed by 1.07%. Research has shown that hemoglobin in animals of the I, II, III - experimental groups was 89.0 - 90.0 g/l, in the 1st experimental group it was increased by 4.4%, with a norm of 90-100 g/l. Erythrocytes, respectively, from - 6.70 to - 6.90 x 10<sup>12</sup> /l. with a norm of 6.70-70.00 x 10<sup>12</sup> /l.

**Key words:** breed, type, performance, daily gains, blood biochemistry**Formulation of the problem.**

The formulation of the problem consists in the solution at the modern stage of the production of cheap and high-quality beef during wartime events, which is carried out at the expense of breeding a new population of the Bukovyna zonal type of meat Komologo Simmental cattle with the use of progressive technology of meat cattle breeding, which is relevant in the Bukovyna region.

Therefore, regional scientists using selection and genetic methods created a new type of meat komologo Simmental on the basis of local Simmentals using the best gene pool of the Simmental breed of the meat direction of the productivity of foreign



and domestic breeding to obtain competitive beef, which will ensure an increase in live weight in compared with the young of other planned approved breeds that are being bred in the Carpathian region of Bukovyna [1-5, 7-10].

When creating a new Bukovyna zonal type of meat komologo simmental cattle, scientists, specialist livestock breeders and managers of basic and subsidiary farms of the public sector of various forms of ownership in Chernivtsi region created, in accordance with the new economic and climatic conditions of this controlled region, more productive meat cattle with high growth energy and meat productivity in all physiological periods development. An example of the creation of a new generation of beef cattle in this way was the importation of Bugai breeders of the meat Komologo Simmental of foreign origin and the transformation of the new cattle population into the Bukovinian type of meat Simmental [6,11].

### **Analysis of recent research and publications.**

In market conditions, an important incentive for the development of dairy and meat cattle breeding in Ukraine should be a scientifically based approach to the evaluation and quality of meat carcasses and the establishment of differentiated, depending on the grade of beef, its origin (dairy or beef cattle, age of slaughter, sex of the animal, etc.), prices for these products.

Since the formation and consolidation of a new population of Simmental meat lumps consists in obtaining highly productive animals of new genotypes in the meat breed of ruminants, which would combine high growth energy and meat productivity and experimental justification and cultivation to high conditions and would be well adapted to local conditions of the Carpathian zone.

An unsolved problem is that the currently existing system of rationing the energy nutrition of young meat contingent of ruminants of various breeds, at an average level of feeding using own feed without supplementing with biologically active substances from the production of high-quality beef, has no experimental justification in achieving a live weight of 450-500 kg in different zones of the Carpathian region of Ukraine.

In this regard, there is a need for the first experimental justification of the approach to the assessment and quality of meat carcasses and the establishment of differentiated, depending on the grade of beef, its origin of different breeds and their genotypes in the conditions of the Carpathian region of Bukovyna.

The purpose of the work is to study the productivity of cattle of different breeds and their crossbreeds at an average level of feeding in the conditions of the forest-steppe zone of the Carpathian region of Bukovyna. The main main goal of the research is the experimental substantiation of productivity at an average level of feeding and the approach to the evaluation and quality of meat carcasses and the establishment of differentiated, depending on the grade of beef, its origin of different breeds and their genotypes in the conditions of the Carpathian region of Bukovyna. In order to realize the above objectives, the following tasks were set when writing the article: to analyze the feeding of cattle of different breeds and their crossbreeds in terms of meat productivity during the summer and winter growing periods, the slaughter qualities were studied, the carcass weight was determined, the chemical parameters of the meat and the biochemical analysis of blood in experimental



ruminants, namely in the forest-steppe zone of the Bukovyna region.

The object of the research was young animals of different breeds and their genotypes of the new generation of meat Komologo Simmental cattle in the breeding farms of the Chernivtsi region. The research was carried out based on the materials of zootechnical and breeding records on the mother herd of the meat Komologo Simmental in the operating breeding plant of the State Enterprise "Rokytno" STOV "Avangard" in Novoselytskyi, Chernivtsi Region. Simmentals, black-spotted, created Bukovinian zonal type of meat Komologo Simmental and crossbreeds were bred in this farm (created Bukovinian type of meat Simmental 50% x 25% Simmental x 25% red-spotted).

**Table 1 - Scheme of a scientific and economic experiment**

Breed, genotypes	Порода, генотипи	Number heads	Peculiarities of feeding experimental animals	
			In summer	In winter
Experimental - I	Simmental	8	The ration adopted in the farm: grain mixture, green fodder of annual crops	Basic ration (OR): straw, concentrated fodder, hay, silage, according to norms and structure
Experimental - II	Black and spotted	8	As in 1 - research group	As in 1 - research group
Experimental - III	Bukovyna zonal type of meat Komologo Simmental	8		
Experimental - IV	Bukovyna zonal type of meat Komologo Simmental 1/2 x 1/2 Simmental x 1/2 Black and spotted	8		

In their work, they determined the meat productivity of different breeds and their genotypes (Table 1), such as Simmental (1st experimental group), black-spotted (11th experimental group), Bukovyna zonal type of meat komologo Simmental (50 % x Simmental 50%), (111 - experimental), Bukovyna zonal type of meat komolo Simmental (50% x Simmental 25% x 25% red - spotted) (1U-experimental group) in the forest-steppe zone of Chernivtsi region.

#### **Summary of the main material of the study.**

The results indicate that bulls of the Bukovyna zonal type of the Simmental beef cattle breed prevailed by 134g (19.4%) more than their peers - analogs II - the black-and-spotted breed of the milk production direction in terms of average daily gains. In our data studies, it has been proven that with the same structure and nutrition of the rations, the animals of III - research group of the new generation of the Simmental meat breed of Austrian breeding were more precocious.

Therefore, there is reason to believe that the formation of meat productivity of a new population of meat lump Simmental cattle for obtaining cheap and high-quality



beef, high productivity and fattening qualities using the method of absorptive crossing of the local Simmental breed with bulls of meat breeds, in particular with the blood of Austrian selection is the most effective in the conditions of the forest-steppe zone of Bukovyna.

At the end of the final period, upon reaching a live weight of Bugai goats of more than 365.0 - 390.0 kg at the age of 15 months, a control slaughter was carried out. According to the results of the control slaughter, Bukovyna zonal type meat Komologo Simmental bulls had a carcass weight of 218.5 kg, which is 32.0 kg (17.1%) more compared to their peers - analogues of the black-spotted breed. The slaughter yield in animals of the 1U group was almost the same. The highest slaughter yield at the age of 15 months was obtained from Bukovyna zonal type meat Komologo Simmental - by 5.5% more compared to animals - analogues of the black-spotted dairy breed.

It was established that the differences in the main indicators of meat productivity in animals, regardless of their genotype, were high. From the research data, it is quite clear that the largest pre-slaughter carcass weight and slaughter weight was obtained from animals of the III - experimental group. They prevailed by 12.5, 32.0 and 22.3 kg (6.0 – 17.2 and 11.3%) by carcass weight of analogues of groups I - II and IV. It should be noted that bulls of group III also had an advantage over analogues of groups I - II and IV in all indicators of meat productivity. No significant difference was found in the level of meat productivity between animals I and IV - experimental groups. In addition, it was once again shown that domestic animals of the III - experimental group had excellent meat qualities, high carcass yield and slaughter yield with limited fat deposition.

In our research, we studied the results of the control slaughter of experimental bulls of various breeds, crossbreeds and their genotypes (Table 3). It was established that the multiplicity of increase in pre-slaughter live weight was 1.35 times more in animals of the Bukovina zonal type than in other breeds. ruminants The highest pre-slaughter weight at the age of 15-months was 458 kg for Bukovyna zonal-type beef Komologo Simmental bulls, and the lowest was 401.7 for simmental ruminants of the same age.

We did not find a reliable interbreeding difference in the output of the paired carcass in all age periods. By this indicator, the Bugays of the Bukovyna zonal type of meat Komologo Simmental cattle were somewhat better. The slaughtering qualities of Bugays of different breeds and their crossbreeds were studied with the approach to the real capabilities of agricultural enterprises of different forms of ownership in the fodder background with the aim of establishing breed differences in the Carpathian zone. When comparing pre-slaughter live weight and carcass weight, yield of paired carcass, yield of internal heart fat, slaughter weight and slaughter yield in experimental bulls of different breeds, there is a noticeable difference in these parameters [3]. According to indicators of pre-slaughter weight at the age of 15 months, the best were the beef cattle of Komologo and Simmental cattle. This indicator in them was 461.0 kg on average, which is significantly greater than that of peers of the Bukovinian type of meat Komologo Simmental (1/2 x 1/2 black-and-white) by 3 kg and 16 kg, respectively. In terms of slaughter yield, the meat



Komologo Simmental bulls had 59.3%, which is 4.4% more than peers of the black and spotted cattle breed.

Study of the chemical composition and caloric content of the longest back muscle of experimental animals of different planned breeds, types, genotypes and their crossbreeds in the conditions of the Bukovyna region.

Therefore, the high meat productivity of fattening cattle is determined not only by indicators of carcass weight and its morphological composition, but also to a large extent by indicators of nutritional value and biological value of meat as a food product, which is its chemical composition.

**Table 2 - Chemical composition of back meat of cattle of different breeds and their genotypes**

Indicator	Groups of animals			
	I- experimental	II-- experimental	III-- experimental	IV-- experimental
Water, %	70,95+0,57	71,50+0,37	69,50+0,64	72,05+0,39
Dry matter,%	29,05+0,56	28,5+0,35	30,5+0,65	27,95+0,37
Protein, %	17,94+0,37	19,65+0,45	20,72+0,35	20,29+0,58
Fat, %	8,01+0,86	6,75+0,51	6,94+0,87	7,54+0,38
The ratio of protein to fat	2,31+0,25	2,95+0,21	3,09+0,45	2,71+0,15
Ash, %	1,10+0,01	1,08+0,02	1,07+0,03	1,12+0,03
Calorie content of 1 kg of meat, kJ	6448,6+180,6	6355,0+120,6	6683,6+325,6	6818,0+84,3

From the above (Table2), it can be seen that the difference in the protein content of Bukovinian zonal type of meat komologo Simmental 50% x 50% Simmental was higher than that of peers of the black-spotted breed by 1.07%. The most fat was contained in the meat of animals of the Simmental breed, and the least - in the analogues of crossbreeds of the 1U group, although there was no significant difference. No significant difference was found in terms of meat caloric content, but it should be noted that it was the highest among the Bukhays (Bukovyn zonal type of meat komologo Simmental 50% x 25% Simmental x 25% red-spotted) 6.8 mJ, which 6.3% and 6.3 mJ more than black and spotted. Thus, the young of genotype 2 - group due to obtaining the largest absolute increase in live weight during the experimental period spent the least feed units and exchangeable energy per 1 kg of growth at to a slight increase in consumption of digestible protein relative to the Bugayans analogues of the black and mottled breed.

The results of the conducted research show that no significant difference was found between the research groups in terms of the chemical composition of the meat. The meat of domestic animals is classified as high-quality beef based on the ratio of protein and fat. Based on the above data, it can be assumed that the meat of bulls of the I group contained a little more fat, and III - protein, than that of peers of the II and IV groups. Therefore, their meat had a higher energy value. The data obtained by us coincide with the data of other domestic authors.





At the end of the research, before the control slaughter, blood was taken for the hematological parameters of the blood in the experimental animals at the beginning and at the end of the experiment. Analyzing the hematological parameters of the blood of animals of different breeds and their

hybrids and types, it can be noted that the level of hemoglobin and erythrocytes in experimental animals of all experimental groups was lowered at the beginning of the experiment.

It should be emphasized that the hemoglobin in the animals of the I, II, III - experimental groups was 89.0 - 90.0 g/l, in the 1st experimental group it was increased by 4.4%, with a norm of 90-100 g/l. Erythrocytes, respectively from - 6.70 to - 6.90 x 10.12 /l. with a norm of 6.70-70.00 x 10 12./ l. At the end of the experiment, these indicators stabilized, but this process took place more actively in the calves of the 111-experimental group.

The number of leukocytes was reduced in all groups, and was 3.50 - 6.80 x 10.9/l. At the end of the experiment, a decrease in the number of nuclear neutrophils was observed in the 111-experimental group of Bugai citizens. These studies show that the number of segmented neutrophils in the Bugai population decreased at the end of the experiment and amounted to 28.40% in the I-experimental group, 24.66% in the II-group, 19.80% in the III-group, and group IV – 18.4%.

Analyzing the research data, it was proved that there were changes in the composition of lymphocytes. At the beginning of the experiment, their number increased in the blood of cattle of all groups, while at the end of the experiment, a tendency to decrease was observed. Changes in the number of monocytes in animals of all groups were found above the norm, with a norm of 2.00 - 2.50%, but at the end of the experiment, a decrease in their number was found.

Thus, when using different breeds, crossbreeds and their genotypes in the region, which show their high genetic meat potential not only with the adopted type of feeding, but also to study at an average level of energy in the rations with moderate cultivation on feed of own production to obtain high-quality beef in the conditions of the forest-steppe zone of the Carpathians.

**Conclusions and suggestions.** It was established that the Bukovinian zonal type of meat Komologo Simmental created by the Ukrainian Simmental meat breed of the new generation of cattle were more precocious with the same structure and nutritional value of the rations, according to average daily gains, they prevailed by 134g (19.4%) more than peers - analogues II - black-and-spotted breed of milk production direction in the fodder conditions of the Bukovyna region.

Bugai people of the new population of the Bukovyna type of meat Simmental have strong constitution, well-developed fleshy forms (straight, wide back and across and back of the body) and are well adapted to the conditions of the Carpathian zone.

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**Анотація.** В пропонованій статті викладено продуктивність бугайців різних порід і їх помісей жуйних при середньому рівні годівлі в умовах Лісостепової зони Карпатського регіону Буковини. Так, результати досліджень вказують, що бугайці буковинського зонального типу симентальської м'ясної породи худоби за середньодобовими приростами переважали на 134г (19,4%) більше від ровесників – аналогів II – чорно - рябої породи молочного напрямку продуктивності. За результатами контрольного забою бугайці буковинського зонального типу м'ясного комолого сименталу мали масу туші 218,5кг, що на 32,0кг (17,1%) більше порівняно з ровесниками - аналогами чорно – рябої породи із забійним виходом у віці 15 - місяців отримано від бугайців буковинського зонального типу м'ясного комолого сименталу – на 5,5% більше порівняно з тваринами - аналогами чорно - рябої молочної породи. За показниками перед забійної маси у віці 15 - місяців кращими були бугайці



м'ясного комолого сименталу худоби. Цей показник у них становив в середньому 461,0кг, що достовірно більший, ніж у ровесників буковинського типу м'ясного комолого сименталу 1/2 x 1/2 чорноряба) на відповідно на 3кг та 16 кг. Встановлено, що різниця показників по вмісту протеїну у бугайців буковинського зонального типу м'ясного комолого сименталу 50% x 50% симентальська перевищувала ровесників чорно - рябої породи на 1,07%. В дослідженнях доведено, що гемоглобін у тварин I, II, III - дослідних груп становив 89,0 – 90,0 г/л, у IY-дослідній був підвищений на 4,4%, при нормі 90-100 г/л. Еритроцити відповідно від 6,70 до – 6,90 x 10<sup>12</sup> /л. при нормі 6,70 – 70,00 x 10<sup>12</sup> /л.

**Ключові слова:** Порода, тип, продуктивність, добові прирости, біохімія крові