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## THE INTENSITY OF GROWTH OF YOUNG KALMYK BREED IN THE CONDITIONS OF LLC «MOSKOVSKY»

### ANNOTATION

In the Republic of Kazakhstan, in recent years, the Kalmyk breed has been noted for its products in the meat direction in the development of meat cattle breeding. It is known that the productive properties of young animals are formed on the basis of heredity in the process of complex interaction between the organism and the environment, so the study of growth and development patterns of young animals of different genotypes is of great importance.

Rations were compiled according to the fodder produced by the farm, depending on the age and sex of the animals. Feeding and housing conditions of experimental young animals before the loss of beet were organized in accordance with the technologies adopted in meat cattle breeding. The article presents research data on the dynamics of the growth and development of purebred Kalmyk in the contracts of Moskovsky LLP. During the research work on the farm, the control groups received 15 heads from birth to 12 months from each male trail: Bulls and female prints from the male Trail Moryak-120541 of group I - II; Bulls and female prints from the male trail Stroyny-2520 of Group III-IV. According to the requirements of the technology of experimental cattle breeding, control groups were fed and cared for at the same level. The control was determined according to the methodology for determining the ratio of maturity, growth dynamics of the live weight of the Young of the group, average daily growth, and absolute growth. The live weight of purebred meat Kalmyk Bulls and females at birth is 29-33 kg, and at 3 months-96-112 kg, at 6 months-149.1-167 kg, respectively, at 9 months-217.7-248 kg., and 245-310 kg at the age of 12 months.

**Key words:** *Kalmyk breed, average daily growth, Live weight.*

**Introduction.** The development of beef cattle breeding in the Republic of Kazakhstan in recent years is achieving good results as the most important branch of livestock.

Kalmykian cattle breed developing on the productivity of beef cattle breeds. Due to the features of the breed such valuable biological properties as an ecological and economic adaptation to any climatic conditions, which contributes to good growth, as well as: stability, longevity, indiscriminate feed, constitutional strength, resistance to infectious diseases, easy calving, high maternal qualities are preserved. Thanks to such properties, Kalmyk cattle were able to compete with many meat breeds imported from abroad, which contributed to their compliance with the requirements of the modern market. Seed formation and ripening-thanks to the work of the sweat glands in summer keeps it cool and increases its thermal resistance. And in winter - because of the influence of artificial and in most cases natural selection in conditions of nomadic cattle breeding with resistance to cold, i.e. severe, sharply continental climate, consequences of work of sebaceous glands and basis of long thick wool. The peculiarity of this breed is the seasonal live weight and fatness [1-3].

The live weight of young animals and their growth rate depend on various factors.

According to researchers, the productivity of young animals under the same environmental conditions is determined by their genetic capabilities (D. Levantine et al. 1979; L. P. Prakhov, M.N. Kletushkin, 1980; B. A. Bagrii, 1997).

The aim of the study is a comparative study of the growing intensity potential, live weight, and absolute and average daily gain of bulls of Kalmykian breeds Moryak - 120541 and Stroyny -2520 in the LLP "Moskovsky" located in the North-Kazakhstan region.

**Material and research methodology.** To study the dynamics of weight and growth of young animals of different breeds of breeding lines in LLC "Moskovsky" research experience was carried out. Animals aged from 15 heads to one year from each breeding line were selected as control groups: I-II group Moryak - 120541; III-IV group steers and heifers belonging to Stroyny-2520 lines.

It is known that the productive properties of young animals are formed on the basis of heredity in the process of complex interaction between the organism and the environment, so it is important to study the patterns of growth and development of young animals of different genotypes.

Rations were compiled according to the feed produced by the farm, depending on the age and sex of the animals. Feeding and housing conditions of experimental young animals before weaning were organized under the technologies accepted in beef cattle breeding. The dynamics of live weight gain of the control group was carried out by monthly weighing of the cattle.

Studies were conducted at the Department of Livestock Production Technology of Kostanai Regional University named after A. Baitursynov in the laboratory to assess the quality of fodder and livestock products. The analyzer NIRS DS2500 for fodder was used to determine the quality of fodder. The analyzer of forages NIRS DS2500 is intended for the measurement of spectral optical density (decimal logarithm of spectral reflectance coefficient) of forages in the near-infrared and visible spectral range. The principle of operation of spectrophotometers is based on the comparison of two light fluxes: full, taken as 100% reflection, and attenuated when reflected from the studied sample.

Glass funnels, conical and measuring flasks, measuring cylinders, pipettes, beakers, glass sticks, porcelain mortars, burettes, Bunsen flasks, and Petri dishes were used for laboratory examination of feed.

Changes in live weight based on the method of S. Brody (1), (2), (3);, kg absolute, average daily, and relative gains were calculated according to the following formulas [4-7].

We calculated the absolute daily growth of the studied animals using the following equation:  
 $X = W1 - W0$  (1)

Where indicators,

W1- live weight obtained at the end of the experiment in animals, g.

W0- live weight obtained at the beginning of the experiment in animals, g.

1. The average daily gain of cattle was calculated using the following formula:

$$C = \frac{W1 - W0}{t1 - t0} \quad (2)$$

Где: t1 – time values at the end of the experiment, to

t0 – time indices at the beginning of the experiment, to

2. Relative growth is calculated based on the results obtained by the formula:

$$K = \frac{W1 - W0 * 100}{(W1 + W0) * 0,5} \quad (3)$$

Where: W1-animal live weight at the end of the experiment, g; W0-animal live weight at the beginning of the experiment.

The results were analyzed statistically using Statisticaver. 10.0 [19] by one-way analysis of variance (ANOVA) for non-orthogonal designs at significance levels  $p \leq 0.05$  and  $p \leq 0.01$ . Arithmetic means ( $\bar{x}$ ) and standard deviations (Sd) were calculated. The value of the deviations was determined using Fisher's test.

**Research result.** The nutritive value of fodder was determined based on the analysis of the chemical composition and coefficients of assimilation of nutrients following the Cattle Nutrient Requirements [17,18]. With semi-intensive fattening, the average daily ration for one bull was more than 10 kg of corn silage, 1 kg of grass hay, 0.5 kg of barley straw, 1 kg of milled wheat grain, and 1 kg of milled barley grain supplemented with premix "Polfamix" (50 g). The quantity of silage fed to

bulls was evenly increased in 30-day intervals, until the end of the research, which allowed to obtain 10% of remains from daily fattening.

The nutrient content of the corn silage was consistent with the recommended values commonly noted under production conditions. The quality of grass hay was satisfactory and its nutritive value was maintained at a constant level throughout the experiment.

The productivity of animals is fully dependent on the state of the fodder base in the farm, that is, the ability to provide animals with fodder, taking into account their productivity and age.

Fodder plays a decisive role not only as the main source of animal products but to a large extent characterizes the production efficiency of the industry, since more than 50% of the costs are spent exactly on feeding.

According to the basic indicators of forage, wheat grain, and barley grain have the highest nutritional value. The use of corn silage in feeding beef cattle is a positive point to increase growth, which is also proved by studies of other authors.

One of the important signs of breeding is the further development of the live weight of young cattle. High indicators on the way of cattle breeding have a great impact on the development of the farm in an effective direction. The main factors determining the efficiency of beef cattle breeding, and one of the most important indicators characterizing the degree of development of young animals, the level of meat productivity, is the live weight. It was found that the calves put into the control groups during the study have a known intergroup difference in birth weight. LLC had control indicators of average daily gain and live weight during a certain age of the experimental group (Table 1).

Table 1 – Indicator of live weight of experimental groups, kg

age, month	Experimental groups			
	Moryak-12054		Stroinyi -2520	
	Group I steers	Group II chicks	Group III steers	Group IV chicks
birth weight	33 ± 0,69	29 ± 1,67	30,2 ± 0,68	28 ± 1,57
3	112 ± 1,42	96 ± 1,36	109,6 ± 0,49	98 ± 1,02
6	167 ± 0,25	163,5 ± 1,05	149,1 ± 0,65	169 ± 0,30
9	248 ± 1,08	229 ± 0,26	229 ± 0,26	217,7 ± 1,0
12	310 ± 2,94	263 ± 2,74	269 ± 2,83	245 ± 4,07

P≤0,001

The rapid growth of young cattle has a great influence on their beefiness and is considered the main feature of selection in beef cattle breeding [8].

As a result of comparing the above data, the live weight of newborn bulls in different groups was 30.2-33 kg, females-28-29.2 kg, which indicated sufficient development of the young in the embryonic period. Indicators of group II showed a weight of 1 kg heavier than that of group IV peers.

As a result of the sufficient growth rate and development of the young animals, by 12 months from birth, the live weight of bulls reached 269 and 310 kg, and that of bulls - 245 and 263 kg, respectively. At the same time, Group II bulls weighed 18 kg (14% ) more than Group IV bulls, respectively, and Group I bulls-41 kg. This advantage is explained by the phenomenon of heterosis (Fig.1).



Figure 1 – 12-month-old steers at «Moskovsky» Ltd.

The results of the study showed that the absolute increase in the live weight of young animals depended on their maintenance and feeding. Within 12 months from the moment of birth weight of youngsters of group I was 38,2 kg (10,3%) more than youngsters of group III, respectively, weight of youngsters of group II was 17,2 kg (9,8%) more than youngsters of group IV. Absolute gain of live weight also varied not only depending on the age of young animals but also depending on the time of the year ( Table 2).

Although there is good growth in the summer, the decrease in growth by winter can be controlled[9-12].

Table 2 – Absolute growth of young progeny of different lines, kg ( $X \pm Sx$ )

age, month	Experimental groups			
	Moryak-12054		Stroinyi -2520	
	Group I steers	Group II chicks	Group III steers	Group IV chicks
3	79 ± 1,65	67 ± 1,48	79,4 ± 1,23	70,0 ± 1,37
6	88 ± 3,77	67,5 ± 2,97	589,5 ± 1,26	71 ± 0,96
9	81 ± 3,9	65,5 ± 2,14	83,3 ± 1,02	48,7 ± 0,96
12	62 ± 6,04	34 ± 5,55	40 ± 1,44	27,3 ± 1,71
0-12	277 ± 5,79	234,2 ± 4,23	238,8 ± 2,57	217 ± 2,63

$P \leq 0,001$

In addition, differences in the absolute growth of the young in all groups were due to their biological characteristics, as shown during the study, which was observed in the newborns of the young shown above.

As a result of the study, there were no significant differences in the average daily growth of steers and steers of each group from birth to 3 months of age. During the analysis of the received data, the high average daily gain at the age from birth to 12 months in bulls of Moryak -12054-758,9 accordingly was 641,8 g, i.e. youngsters of the I group 104,7 g from youngsters of the III group, and also youngsters of the II group 47,3 g from youngsters of the IV group.

From birth to the period of weaning (0-9 months) the young animals (bulls and heifers) of the breeding line Sailor - 12054 grew more intensively than the young animals of line Stroyny - 2025. The

average daily gain of bulls on line Sailor - 12054 showed more indexes on 13,8 g than on line Stroinyj - 2520, accordingly heifers on 24 g more.

In the period after weaning (9-12 months) the advantage of Sailor - 12054 lines were preserved, and the level of daily gain of steers-51.1 g and heifers-54.3 g increased. ( Table 3).

Table 3 – Average daily growth of young animals belonging to different breeding lines

age, month	Experimental groups			
	Moryak-12054		Stroinyi -2520	
	Group I steers	Group II chicks	Group III steers	Group IV chicks
0-3	877,7±18,34	744,4±16,41	822,2±13,7	777,7±15,19
3-6	611,3±41,48	750,2±32,95	438,8±14,23	788,8±19,05
6-9	900,3±28,41	727,2±32,95	887,7±15,96	541,1±19,05
9-12	688,8±67,09	377,0±0,61	444,4±15,64	303,3±12,75
0-12	758,9±15,86	641,8±11,59	654,2±7,72	594,5±7,21

P≤0,1

As a result of the study, the average daily gains of the control groups were revealed according to the specified indicators (Fig.2).

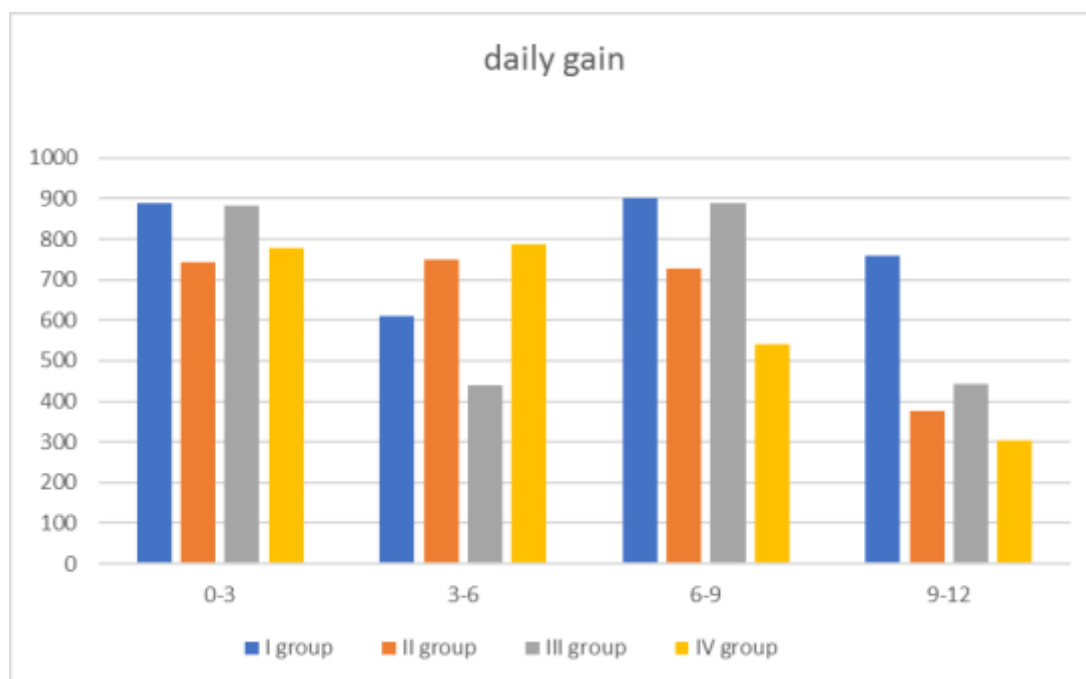


Figure 2 – Average daily growth of control groups according to indicators

According to the figures in the figure, in terms of average daily gain of the control group steers of the group, I line Moryak- 12054 are equal to the dynamics of average daily gain at the age of 0-3 months with steers of group III lines Stroinyi -2520. And according to the dynamics of the average daily gain at the age of 3-6, 6-9, and 9-12 months the bulls of Group I are higher than the bulls of Group III. According to the data of Group II, at the age of 0-3, 3-6 months the average daily gain was low in heifers of Sailor - 12054 lines, while at the age of 6-9, 9-12 months the dynamics of average daily gain was high.

According to the ratio from birth to 3 months, we observe the advantage from the youngsters of the first group to the youngsters of the third group - 4.6%, and from the youngsters of the second group to the youngsters of the fourth group - 3.9%. At the age of three months to six months, the growth of the ratio of youngsters in the first group by 16.5% is less than that of youngsters in the third group, growth of the ratio of youngsters in the second group by 16.6% is less than that of youngsters of the fourth group. From the sixth to the eighth month, group 1 youngsters showed an increase in the ratio of group 3 youngsters by



39% and, accordingly, group 2 youngsters by 0.3% more than group 4 youngsters. At the age from birth to 12 months, group 1 youngsters showed a 1.9% more ratio than group 3 youngsters, and group 4 youngsters showed a 3.2% more ratio than group 2 youngsters (Table 4).

Table 4 – Growth ratio of young animals in different lines, % ( $X \pm S_x$ )

age, month	Experimental groups			
	Moryak-12054		Stroinyi -2520	
	Group I steers	Group II chicks	Group III steers	Group IV chicks
3	108,9	107,2	113,5	111,1
6	39,5	53,5	30,5	53,2
9	39	33,4	42,2	25,2
12	22,3	13,8	16	11,8
0-12	161,5	160,2	159,6	157,0

According to our research, the natural conditions of the North-Kazakhstan region for Kalmyk breeds of animals can be learned from the indicators of live weight, which is favorable for the normal growth of young animals of different ages.

**Conclusion.** One of the biggest problems in cattle breeding is increasing the production and improving the quality of cattle meat.

The solution of this problem is provided by intensification of cattle breeding by introducing progressive technologies, more complete use of genetic potential of meat productivity of bred animals, increasing the growth rate, organization of adequate feeding and creating optimal conditions for keeping young animals.

Currently, Kalmykian breeds are found in Aktobe, Zhambyl, Kyzylorda and North Kazakhstan regions of Kazakhstan. Due to the fact that the wide distribution of Kalmykian breed is not influenced by various environmental factors, several regional types have appeared in the breed population.

In modern conditions of meat cattle breeding, the North Kazakhstan region is very favorable for the rapid breeding of the Kalmykian breed. Summarizing the data of the above-mentioned farm, in the course of analysis of the studied data it was established that in comparison with the breeding line Sailor - 12054 the more intensive growth was noted in the lines of Sailor - 12054, as the genetic level of the lines of Sailor is well distributed in the offspring. Summarizing the research work, we consider it necessary to consider the possibilities of improving the productivity and increasing the breed qualities of the progeny of Sailor - 2520 purebred Kalmykian breed.

In our opinion, today in the North-Kazakhstan region it is necessary to take into account the requirements for the improvement of the Kalmykian breed. If earlier selection on the breeding of beef cattle was aimed at fast maturing and better accumulation of fat in young cattle, now the fast-growing type of beef cattle is the most valuable, as it has more intensive protein formation than fat and higher feed compensation. If young calves change their diet from the time of weaning, then you need to think about how to build muscle more quickly to make them more mobile (comfortable) and then send them to intensive fattening.

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## ТҮЙІН

Қазақстан Республикасында соңғы жылдары етті мал шаруашылығын дамытудағы етті бағыттағы өнімділігі жағынан қалмақ тұқымы көзге түсіп жүр. Төлдердің өнімділік қасиеттері ағзаның тіршілік ету ортасымен күрделі өзара әрекеттесу процесінде тұқым қуалаушылық негізінде қалыптасатыны белгілі, сондықтан әртүрлі генотиптердегі төлдердің өсуі мен даму заңдылықтарын зерттеу үлкен маңызға ие.

Рациондар малдардың жасына және жынысына байланысты шаруашылықтың өндіретін азықтары бойынша құрастырылды. Тәжірибелік жас малдарды енесінен айырғанға дейін

азықтандыру және ұстау жағдайлары етті мал шаруашылығында қабылданған технологияларға сәйкес ұйымдастырылды.

Мақалада таза қалмақ тұқымды төлдерінің өсіп-даму динамикасы бойынша «Московский» жауапкершілігі шектеулі серіктестігі аясында зерттеу деректері келтірілген. Шаруашылықта зерттеу жұмыстарын жүргізу барысында бақылау топтарына әртүрлі аталық ізден тараған туғаннан бастап 12 айлық жасқа дейінгі, әр топта 15 бастан төлдер алынды: I-II топ Моряк- 120541 аталық ізінен бұқашықтар мен ұрғашы баспақтар; III-IV топ Стройный-2520 аталық ізінің бұқашықтары мен тайыншалары. Тәжірибе етті ірі қара мал шаруашылығының технологиясының талаптарына сәйкес жүргізіліп, бақылау топтары бірдей деңгейде азықтандырылып, күтіп бағылды. Бақылау топ төлдерінің тірілей салмағының жетілу, өсу динамикасының қатынасы, орташа тәуліктік өсім, абсолюттік өсімдерді анықтайтын әдістемелер бойынша анықталды. Зерттеу нәтижесінде таза тұқымды қалмақ бұқашықтары мен тайыншалардың туғандағы тірілей салмақтары 29-33 кг, ал 3 айлықтарында 96-112 кг, 6 айлық жасында тиісінше 149,1-167кг, 9 айлық жасында 217,7-248 кг., 12 айлық жасында 245-310 кг көрсеткіштеріне қол жеткізді.

### РЕЗЮМЕ

В Республике Казахстан в последние годы в развитии мясного скотоводства по продуктивности в области производства мяса выделяется калмыцкая порода. Известно, что продуктивные свойства молодняка формируются на основе наследственности в процессе сложного взаимодействия организма с средой обитания, поэтому большое значение имеет изучение закономерностей роста и развития молодняка различных генотипов.

Рационы составлялись по кормам, производимым хозяйством, в зависимости от возраста и пола животных. Условия кормления и содержания подопытных молодняка до потери свежести были организованы в соответствии с технологиями, принятыми в мясном животноводстве.

В статье представлены данные исследования динамики роста и развития чистопородного калмыцкого потомства в условиях общества с ограниченной ответственностью «Московский». В ходе проведения исследований в хозяйстве от каждого производителя в контрольные группы было взято по 15 приплодов от рождения до 12-месячного возраста: I-II группа бычки и телки линии Моряк- 120541; III-IV группа бычки и самки линии Стройного-2520. Контрольные группы получали кормление и уход на том же уровне, согласно требованиям технологии опытного выращивания крупного рогатого скота. Живую массу потомства контрольной группы определяли по методике, определяющей коэффициент динамики роста, среднесуточный прирост и абсолютный прирост. В результате исследований живая масса бычки и самки чистокровной калмыцкой породы составила 29-33 кг, в 3 месяца 96-112 кг, в 6 месяцев 149,1-167 кг, в 9 месяцев 217,7-248 кг. , 12 мес в 12 мес в возрасте 245-310 кг.