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ОЦЕНКА ГЕНЕАЛОГИЧЕСКИХ ЛИНИЙ КРУПНОГО РОГАТОГО СКОТА КАЗАХСКОЙ БЕЛОГОЛОВОЙ ПОРОДЫ

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Проведена оценка хозяйственно полезных признаков и экстерьера основных генеалогических линий коров казахской белоголовой породы в двух племенных хозяйствах Алтайского края. Для анализа использованы показатели хозяйственно полезных признаков и экстерьера первотелок и полновозрастных коров казахской белоголовой породы: живая масса, промеры, общий балл за экстерьер, молочность. Установлено, что первотелки линии Замка 3035 превосходят сверстниц по обхвату груди, Задорного 1325 и Короля 13682 – по косой длине туловища. Животные линии Пиона 29 по живой массе уступают сверстницам. Лучшие показатели по живой массе отмечены у полновозрастных коров линии Задорного 1325, по молочности – у линии Короля 13682. В целом достоверных межлинейных отличий по большинству признаков у животных оцениваемых линий не отмечено. Анализ полновозрастных коров, принадлежащих к линиям Замка 3035, Короля 13682, Задорного 1325, свидетельствует о превосходстве сверстниц по живой массе, линии Короля 13682 – по молочности. Изучение коэффициентов наследуемости показало низкий уровень влияния генотипа на изменчивость основных признаков. Данный факт может свидетельствовать о высокой степени консолидации казахской белоголовой породы. В племенной работе с данной породой необходимо шире использовать производителей, принадлежащих линиям Задорного 1325, Замка 3035. Особое внимание необходимо уделить ротации генеалогических групп. Рекомендуется для повышения генетической изменчивости признаков в стадах использовать новых неродственных животных из других регионов. Для этого следует проводить отбор согласно требованиям по бонитировке и параметрам отбора, рассчитанным для конкретного хозяйства.

Ключевые слова: крупный рогатый скот, казахская белоголовая порода, генеалогическая структура, линия, тип, живая масса, молочность

ESTIMATION OF GENEALOGICAL LINES OF CATTLE OF THE KAZAKH WHITE-HEADED BREED

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An assessment of economically useful traits and external conformation of the Kazakh white-headed cows of the main genealogical lines, bred in the farms of the Altai Territory, was carried out. For the analysis, indicators of economically useful traits and conformation of first-calf heifers and full-aged cows of the Kazakh white-headed breed were used: live weight, measurements, total score for conformation, milk production. It was established that first-calf heifers of Zamok 3035 line surpass their herdmates in chest girth, and heifers of Zadorny 1325 and Korol 13682 lines are superior in oblique body length. Cows of Peon 29 line are inferior to their peers in live weight. The best indicators in live weight were noted in full-aged cows of Zadorny 1325 line, in milk yield – in Korol 13682 line. In general, there were no significant differences in most animal traits between the lines assessed. Analysis of full-aged cows belonging to the lines of Zamok 3035, Korol 13682, Zadorny 1325 showed that they surpass their herdmates in live weight, the lines of Korol 13682 – in milk yield. The study of the coefficients of heritability showed a low level of influence of the

genotype on the variability of the main traits. This fact may indicate a high degree of consolidation of the Kazakh white-headed breed. In the breeding work with this breed, it is necessary to make wider use of sires belonging to the lines of Zadorny 1325, Zamok 3035. Particular attention should be paid to the rotation of genealogical groups. It is recommended to use new unrelated animals from other regions to increase the genetic variability of traits in herds. In order to do this, selection should be carried out in accordance with the grading requirements and selection parameters calculated for a particular farm.

Keywords: cattle, Kazakh white-headed breed, genealogical structure, line, type, live weight, milk yield

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INTRODUCTION

In the practice of breeding cattle of the Kazakh white-headed breed, a balance has been formed between the use of bulls of existing lines and producers belonging to the lines, the formation of which has reached the final stage [1].

A significant role in this breed is played by animals belonging to the Shaman 1161, Peon 61184, Graf 8489, Marshal and Akbas-Bai lines, which are currently actively used to create highly productive herds of animals [2].

The structure of the Zorky 3433 line is represented by highly productive offspring that have undergone targeted selection in a number of generations and are distinguished by breeding and productive qualities characteristic of the line. This ancestor is a descendant of the bull-producer Zadorny 1325 of the intra-breed hornless type "Zavolzhsky" created in the Volgograd region [3].

Crossing of lines gives a variety of animals in terms of productivity in each combination of parental pairs. At the same time, the influence of linear bulls on the indicators of productive and breeding qualities of animals is not the same [4].

Rational use of genotypic factors, as well as their interaction, provide a real opportunity to improve the productive qualities of animals using a heterogeneous selection. Only in the conditions of the Saratov region is it possible to use the potential of nine animal lines for different variants of selection [5, 6].

Working with lines in intensive technology conditions is of particular importance. So, in the conditions of the Tambov region, bull calves belonging to the Landysh 9878 line have the largest live weight, whereas in the leading farms of the Republic of Kazakhstan the lines of Veteran 7880, Korol 13682 are the largest [7–10].

The use of target zootechnical and genetic parameters of the breeding value in the process of selection and breeding work with the Kazakh white-headed cattle breed contributes to the creation and improvement of highly productive lines in animal populations [11–13].

Breeders of the Kazakh white-headed breed of most of the lines have good reproductive qualities. Rational use of the best linear animals in herd reproduction will make it possible to predict the future reproductive capacity of cows at an earlier age [14, 15].

A two-stage assessment of bulls makes it possible to conduct breeding work aimed at creating large, intensively developing animals with good meat qualities. It is necessary to have a system of control and testing stations where work with animals is carried out for an objec-

tive assessment of breeding bulls and working with lines [16–20]. The aim of the study is to assess the productive qualities and conformation of cows of the Kazakh white-headed breed of various genealogical lines in the conditions of the Altai Territory.

MATERIAL AND METHODS

The research was carried out in the breeding farms of the LLC "Farm" and LLC "Kolos" of the Altai Territory, engaged in breeding and selection of cattle of the Kazakh white-headed breed.

Indicators of economically useful traits and conformation of first-calf heifers and full-aged cows of the Kazakh white-headed breed were used for the analysis: live weight, measurements, total score for conformation, milk production.

The assessment of genealogical lines of full-aged cows of the Kazakh white-headed breed was carried out. Comparison of lines was carried out in relation to the average by the herd and the breed standard. Interline differences were identified in the on-farm aspect.

The reliability of the difference was determined between the animals of the evaluated line and the rest of the population. The research results were processed by the method of variation statistics according to the generally accepted methods[1],[2].

RESULTS AND DISCUSSION

The assessment of the population of first-calf heifers of the Kazakh white-headed breed in the LLC "Farm" shows that they are relatively homogeneous in terms of measurements (see Table 1). Noteworthy is the superiority over the peers of the first-calf heifers of the Zamok 3035 line in terms of chest girth, which is advisable to use when ordering mating. The females of Zadorny 1325 and Korol 13682 lines are distinguished by the oblique length of the body. The milk production of animals of all lines ex-

Табл. 1. Характеристика линий первотелок казахской белоголовой породы ООО «Фарм»
Table 1. Characteristics of the lines of first-calf heifers of the Kazakh white-headed breed in LLC "Farm"

Trait	Line				By sample (n = 67)
	Korol 13682 (n = 34)	Zadorny 1325 (n = 16)	Zamok 3035 (n = 10)	Peon 29 (n = 7)	
Live weight, kg	455,0 ± 9,01	450,9 ± 13,04	447,7 ± 16,23	418,1 ± 11,73*	449,1 ± 6,30
Height at the withers, cm	122,9 ± 0,65	122,9 ± 1,29	122,6 ± 1,76	119,9 ± 1,33	122,5 ± 0,55
Height at hips, cm	126,2 ± 0,66	126,3 ± 1,20	127,4 ± 1,37	123,6 ± 1,41	126,1 ± 0,52
Chest width behind shoulder blades, cm	44,2 ± 0,51	44,3 ± 0,65	46,6 ± 1,04	44,4 ± 0,75	44,6 ± 0,36
Width in hips, cm	51,7 ± 0,41	51,1 ± 0,62	49,8 ± 0,44	50,3 ± 0,56	51,1 ± 0,28
Width of loin, cm	29,3 ± 0,52	28,3 ± 0,86	29,7 ± 0,58	27,4 ± 0,80	28,9 ± 0,37
Oblique body length, см	152,7 ± 1,16	153,9 ± 1,95	149,5 ± 2,38	150,1 ± 2,76	152,3 ± 0,90
Oblique rear length, cm	51,3 ± 0,38	51,6 ± 0,96	51,4 ± 0,29	51,7 ± 1,83	51,4 ± 0,36
Chest girth behind shoulder blades, cm	182,2 ± 4,67	180,6 ± 6,23	191,5 ± 2,84*	162,4 ± 13,46	181,2 ± 3,28
Milk yield, kg	216,9 ± 4,00	221,0 ± 5,87	225,9 ± 8,70	216,7 ± 8,71	219,0 ± 2,77

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ceeds the requirements of the breed standard. The live weight of first-calf heifers on average in the sample belongs to the elite-record class, while animals belonging to the Peon 29 line are inferior to their peers in this trait ($p \geq 0.95$).

The best indicators in terms of live weight were noted in full-aged cows of the Zadorny 1325 line, in terms of milk production - in the Korol 13682 line. Individuals belonging to the Peon 29 line are significantly inferior to their peers in milk production. In general, there were no significant interline differences in most traits in animals of the evaluated lines of the LLC Pharm (see Table 2).

Analysis of productive traits in the population of cows 5 years old and older of the Kazakh white-headed breed in the LLC "Kolos" showed that the animals meet the requirements of the elite class in terms of live weight, and the breed standard in terms of milk production (see Table 3).

Animals belonging to the lines of Zamok 3035, Korol 13682, Zadorny 1325 correspond to the elite-record class in terms of live weight. No significant differences have been established in terms of milk production and height in the sacrum, while the tallest and most milk production are the animal lines of the Korol 13682.

Табл. 2. Характеристики линий полновозрастных коров казахской белоголовой породы в ООО «Фарм»

Table 2. Characteristics of the lines of full-aged cows of the Kazakh white-headed breed in LLC "Farm"

Trait	Line			By sample (n = 77)
	Korol 13682 (n = 42)	Zadorny 1325 (n = 32)	Peon 29 (n = 3)	
Live weight, kg	540,4 ± 8,23	545,9 ± 9,18	506,7 ± 23,21	541,4 ± 6,02
Height at the withers, cm	122,9 ± 0,47	123,4 ± 0,64	123,7 ± 1,52	123,2 ± 0,38
Height at hips, cm	127,1 ± 0,55	126,9 ± 0,65	127,0 ± 1,41	127,0 ± 0,41
Depth of chest, cm	85,6 ± 0,58	86,1 ± 0,67	82,3 ± 2,13	85,7 ± 0,44
Width of chest, cm	46,3 ± 0,45	45,9 ± 0,60	44,7 ± 0,98	46,1 ± 0,35
Oblique body length, см	159,4 ± 1,57	155,6 ± 4,19	155,0 ± 2,94	157,7 ± 1,96
Oblique rear length, cm	52,0 ± 0,36	53,4 ± 0,44	52,3 ± 1,44	52,6 ± 0,29
Chest girth, cm	199,4 ± 2,80	200,4 ± 3,14	196,0 ± 3,09	199,7 ± 2,02
Pastern girth, cm	21,1 ± 0,16	21,1 ± 0,15	20,3 ± 0,27	21,1 ± 0,11
Milk yield, kg	243,6 ± 3,82	235,0 ± 5,79	207,3 ± 15,04*	238,6 ± 3,23

Табл. 3. Характеристики линий полновозрастных коров казахской белоголовой породы в ООО «Колос»

Table 3. Characteristics of the lines of full-aged cows of the Kazakh white-headed breed in LLC "Kolos"

Line	Trait		
	Live weight, kg	Height at hips, cm	Milk yield, kg
Other lines (n = 93)	559,1 ± 5,88	129,36 ± 0,51	214,8 ± 2,55
Peon 29 (n = 68)	555,0 ± 8,77	129,9 ± 0,70	218,5 ± 3,70
Zamok 3035 (n = 22)	579,3 ± 11,15	129,6 ± 1,09	216,5 ± 4,29
Korol 13682 (n = 43)	560,3 ± 8,59	131,1 ± 0,64	219,1 ± 3,68
Zadorny 1325 (n = 21)	575,2 ± 9,29	129,9 ± 0,50	214,4 ± 4,75
By sample (n = 339)	564,9 ± 3,24	130,1 ± 0,26	216,4 ± 1,40

Assessment of the coefficients of heritability showed a low level of influence of the genotype on the manifestation and variability of the main characters. This fact may indicate a high degree of consolidation according to the characteristics of the estimated populations (see Table 4).

In LLC "Pharm" it is necessary to carry out custom pairing of parental forms in order to achieve the goal of improving the following indicators: live weight, chest depth, oblique body length. Better performances can be achieved by using the best lines of sire bulls.

In LLC "Kolos" it is necessary to conduct animal breeding for the maximum increase in milk production of cows.

In the estimated population of the Kazakh white-headed breed, a low coefficient of heritability of traits was noted. The less genetic variability of traits in a particular herd, the lower the selection effect in the first generation. It is recommended to use new unrelated animals from other regions to increase the genetic variability of traits in herds. For this, selection should be carried out in accordance with the grading requirements and selection parameters calculated for a particular farm.

CONCLUSION

Kazakh white-headed cattle, in contrast to aboriginal analogues, like any cultural breed, needs constant maintenance and improvement of breeding and productive qualities. To improve the productive qualities of animals, it is necessary to make wider use of producers belonging to the lines of Zadorny 1325, Zamok 3035. For the rest of the genealogical structures, it is necessary to identify effective successors. When drawing up breeding programs and improving herds, special attention should be paid to the rotation of genealogical groups. In this case, the quick receipt of improved breeding qualities of animals is guaranteed.

Табл. 4. Коэффициент наследуемости признаков у коров 5 лет и старше

Table 4. The coefficient of trait heritability in cows of 5 years old and older

Trait	Farm	
	LLC «Farm»	LLC «Kolos»
Live weight	0,05	0,03
Height at the withers	0,17	–
Height at hips	0,20	0,01
Depth of chest	0,06	–
Width in hips	0,23	–
Oblique body length	0,11	–
Chest girth	0,19	–
Pastern girth	0,02	–
Milk yield	0,34	0,07

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