МАЛ ШАРУАШЫЛЫҒЫ ЖӘНЕ ВЕТЕРИНАРИЯ
ЖИВОТНОВОДСТВО И ВЕТЕРИНАРИЯ
STOCK-RAISING AND VETERINARY

IRSTI 68.39.31 **DOI https://doi.org/10.37884/2-2023/01**

*E.I. Islamov[1], G.A. Kulmanova[1], B.T. Kulataev[1], I.E. Mukhametzharova[2]**

[1]Kazakh National Agrarian Research University, Almaty, Republic of Kazakhstan,
islamov_esenbay@mail.ru, gulzhan_62@mail.ru, bnar@yandex.ru
[2]S. Seifullin Kazakh Agro Technical Research University, Astana, Republic of Kazakhstan,
*ilmira_pvl@mail.ru**

GENETIC BASES FOR IMPROVING THE REPRODUCTIVE AND PRODUCTIVE QUALITIES OF THE SOUTH-KAZAKH MERINOES BRED IN THE DESERT CONDITIONS CHU-ILI LOW MOUNTAINS AND THE MOIYN-KUM SANDS

Abstract

The article reflects the data of scientific research that can serve the practice of selection and breeding work under conditions of various forms of ownership, as well as the improvement of selection and breeding work and the technology of production of high-quality and competitive sheep products in the conditions of year-round use of the foothill-steppe and desert pastures of the south of Kazakhstan.

The research of polymorphism systems of serum proteins of sheep's blood of different intra-breed types by gender and age groups revealed the presence of certain allele combinations and the ratio of transferrin and hemoglobin genotypes. It has been established that these animals have their own specific range of frequencies of occurrence of alleles and combinations of genotypes. Based on the results obtained, the possibility of using genetic blood markers in the early assessment of the productive qualities of animals has been established.

As a result of scientifically based breeding methods, in the “Batai-Shu” LLP in Zhambyl region created a breeding australized herd of the South Kazakh Merino breed with a white wool yolk, a cut of washed wool of 3.1 kg with a yield of 48-50%.

***Keywords**: selection, assortment, genotypic variability, wool cutting, heredity, correlation, repeatability, erythrocytes, leukocytes, intrabreed type.*

Introduction

Relevance. The results achieved in sheep breeding in the Zhambyl region cannot be recognized as high due to the insignificant proportion of fine and semi-fine equalized wool. An increase in the modification variability of traits does not allow an accurate assessment of the genotype of animals by their phenotype and, as a result, the efficiency of breeding work decreases.

The main reasons are the insufficiently clear specification of the selected traits for individual wool varieties, an incomplete understanding of the gradations of the length of the wool in certain parts of the body of animals, the lack of development of perfect genetic breeding methods, poor knowledge of the heritability features and the relationship of the selected traits [1].

Since the genetic basis of selection is variability, the study of the patterns of variability in the productive characteristics of animals in populations of fine-fleeced sheep of the South Kazakh Merino breed is of fundamental importance for the theoretical and practical purposes of breeding.

The progress of each breed, the increase in its genetic value, largely depends on the presence in it of animals of different genotypes with their distinctive productive qualities and biological characteristics. A greater or lesser level of development of certain leading economically useful traits is undoubtedly associated with the biological characteristics of animals [2].

In this aspect, the study of the variability of selected traits in new natural, climatic and feeding conditions for animals of different genotypes of this breed of sheep in the conditions of deserts and sands of the Moiyn-Kum of the Zhambyl region is of scientific and practical interest, which determines the relevance of this work.

The purpose and objectives of the research is to establish the patterns of correlative variability of the main economically useful traits for the development of genetic foundations for improving the reproductive qualities and increasing the productivity of the South Kazakh merinos.

Scientific novelty. Under the conditions of “Batai-Shu” LLP of the Zhambyl region, the variability of the breeding traits of sheep of different genotypes of the South Kazakh Merino breed was studied in a comparative aspect, and the possibility of effectively using their genetic potential in breeding was practically proved.

Methods and materials

In “Batai-Shu” LLP, as in most farms in the Zhambyl region, sheep are grazing throughout the year. Moreover, unlike some other farms, summer low-mountain pastures are used here for sheep in the summer, and during the year they are in the desert pastures of the Moiyn-Kum sands. In winter and early spring periods, animals are fed with hay and concentrated feed.

Scientific and production experience was carried out in "Batai-Shu" LLP in Shu district of Zhambyl region.

The object of research was the South Kazakh merino rams (I group) and crossbred rams (♂Australian merino x ♀South Kazakh merino) (II group).

Age-related changes in the body weight of the offspring obtained were studied by weighing them at birth, at 4, 7 and 18 months of age. At the same time, exterior body measurements were taken from these animals at the same time.

According to the weighing data, the absolute, average daily and relative gains in their live weight were determined. The exterior features of the physique were studied according to the results of the main measurements of the body, as well as physique indices.

When grading and shearing, the experimental sheep were individually taken into account: live weight, unwashed wool shearing and staple length, and wool samples were taken for laboratory research.

When studying the reproductive ability of the ewes, fertility was taken into account, as well as the safety of the young animals during weaning. The fertilizing ability of rams and fertility was determined by the number of viable lambs obtained from each hundred ewes according to mating and lambing data. At the same time, the survival rate of lambs from birth to weaning was taken into account.

For biochemical studies of animal blood (types of transferrin and hemoglobin), the method of horizontal electrophoresis in starch gel was used, followed by staining of the starch gels according to generally accepted methods. Genetic analysis of the population was carried out using mathematical indicators, where the frequency of alleles and genotypes, the assessment of gene balance was determined in accordance with the Hardy-Weinberg law.

Economic efficiency was calculated on the basis of indicators of animal productivity, taking into account the cost of growing, the cost price of 1c increase (tenge), the profit received from the sale of meat and young animals in live weight.

Results and discussion

Correlative variability of blood parameters and productivity of South kazakh merino sheep was studied on 1.5-year-old breeding rams.

In rams, productivity indicators were determined for 6 traits, and blood was also taken to study hematological parameters for 14 traits. The results of determining the average level of development and indicators of the variability of these traits are shown in Table 1.

Table 1 - Productivity and blood indices of 1.5-year-old buck lambs

Feature	n	$X \pm m_x$	σ	Cv
Shearing of unwashed wool, kg	50	6,81±0,053	0,81	12,1
Staple length, cm	50	9,36±0,059	0,90	9,6
Live weight, kg	50	54,0±2,784	4,26	7,9
Yield of pure fiber, %	50	39,5±0,390	5,07	12,9
Shearing of pure fiber, kg	50	2,68±0,034	0,44	16,4
Coefficient of woolliness, g	50	57,0±0,823	10,7	18,8
Erythrocytes, million in 1 mm^3	50	8,99±0,048	0,66	7,4
Leukocytes, thousand in 1 mm^3	50	6,90±0,138	1,74	25,9
Hemoglobin, g%	50	8,85±0,174	2,48	27,9
Catalase, mg H2O	50	2,16±0,039	0,55	25,9
Peroxidase, c	50	37,5±0,379	5,36	14,3
Acid capacity, mg %	50	35,6±11,39	161	45,2
Acid phosphatase, BE	50	1,01±0,030	0,40	39,8
Alkaline phosphatase, CU	50	9,29±0,368	4,98	53,7
AST, unit in 1 mm^3	50	50,9±0,412	5,44	10,7
Alt, unit in 1 mm^3	50	28,4±0,171	2,23	7,8
Aldolase, uh...	50	2,73±0,125	1,43	52,4
Albumins, g	50	4,84±0,106	1,33	27,6
Globulins, g	50	2,04±0,089	1,11	54,5
Total protein, g %	50	6,88±0,046	0,58	8,4

As seen, the productivity of the experimental buck lambs turned out to be quite high, and the blood counts are within the physiological norms. Nevertheless, it should be noted the relatively high values of the coefficients of variability of the acid capacity of the blood, the content of globulins, the activity of aldolase, alkaline and acid phosphatases. A similar pattern in relation to the variation of interior and biochemical characteristics was noted earlier in studies of sheep and other animal species [3].

Most scientists believe that the productive and breeding qualities, as well as the adaptive properties of animals, are determined by the level of biochemical processes in the body [4]. Studies have proven the possibility of using protein polymorphism in selection, including whey proteins [5].

In our studies, the genotypic features of the composition of whey proteins, the level of activity of aminotransferase enzymes, as well as their heritability and relationship with the productivity of rams, the South Kazakh merino (I group) and in crossbred rams (♂Australian merino x ♀South Kazakh merino) (II group) were studied. Significant interbreed differences were revealed in the content of total protein, its various fractions and in the value of the albumin-globulin coefficient (table 2).

Table 2 - Content of total protein, its fraction and immunoglobulin in blood serum of rams of different genotypes

Indicator	Group	
	I	II
Total protein, g %	7,28	7,42
Albumins, % prealbumin	2,43	2,24
Albumin	22,70	27,64
Postalbumin	6,25	8,80
Globulin, % α	16,0	12,9
β	12,6	12,6
γ	19,1	14,6
Haptoglobin, %	7,8	9,7
Transferrin, %	5,9	4,9
Ceruloplasmine, %	8,4	7,8
Immunoglobulins, mg/ml	43,66±2,3	32,35±1,2

As it can be seen from the data of Table 2, the largest content of total protein and its albuminous fraction is found in the animals of group II, the superiority of which over animals of group I was 1.9; 3.2 and 23.3; 15.9%.

Depending on the ratio of protein fractions, the albumin-globulin coefficient (A/G) in the rams of group I was 0.66, and in group II - 0.96. The highest indexes of globulin fraction had rams-producers of group I – 47.7% against 40.1% in rams of group II.

It is known that gamma globulins participate in creation and maintenance of active and passive immunity in body of animals. As for the content of globulins, including gamma globulin fraction, crossbred rams of group II were superior to rams of group I by 15.2% and 9.0%.

We also isolated fractions of transferrin, haptoglobin, and cerruplasmin. A greater amount of haptoglobin was found in rams of group II (9.7%), a smaller amount - in group I (7.8%). According to the content of cerulloplasmin, animals of group I exceeded animals of II by 7.7 and by 21.7%. The largest share of the transferrin fraction was found in crossbred rams of group II, which outnumbered rams of groups I and II by 5.1 and 26.5%.

As you know, the amount of immunoglobulins in the blood serum is an indicator of the protective properties of the animal organism. Our studies have established that the largest amount of immunoglobulins is contained in the blood serum of rams of group I, the smallest - in group II.

It should be noted that in terms of the level of this indicator, crossbred rams almost do not differ from rams of group I, which indicates an adequate reaction of their body to environmental conditions. The latter is confirmed by the results of studies by some scientists [6] on the survival of young sheep and the safety of adult sheep of different genotypes.

In the practice of zootechnics genetic diversity in animal populations is usually determined by the genealogical structure of the breed or its structural units. According to scientists [7,8], for the approach to differential analysis of genetic variability it is necessary to have a method, which would allow simultaneously to judge about the variability of specific structural genes and provide information about the variability of discrete genes that are part of an integral integrated phenotype. Such methods include the analysis of genetic markers. In the last decades the method of estimation of genetic structure of animal populations was often supplemented by analysis of peculiarities of investigated populations by polymorphic proteins of animal blood.

On materials of results of studying of genetic polymorphism of transferrin's and hemoglobin in the serum of blood of sheep of the South kazakh merino, it is established that in breeding flocks at selection of lambs for breeding it is necessary to give preference to animals with types of transferrin's AA, CC, AB, AL, CE, BC, and at selection in group of repair lambs - with types AA, BC, AL, CE as having the best indicators of breeding and productive qualities. According to scientists, this method allows the selection of genetically determined highly productive animals for breeding at an early stage of their development [9].

Immunogenic methods, which reveal in animals genetically determined, codominant inherited and unchangeable types of polymorphic proteins and enzymes in postnatal ontogenesis, make it possible to use them in solving problems of monitoring of breeding processes in populations. Polymorphic proteins of biological fluids do not change in ontogenesis, are easily determined at early stages of animal development and, as a rule, have a codominant type of inheritance. Due to this, they are ideal genetic markers and are widely used in the study of the genetic structure of populations and the development of methods to control breeding and genetic processes. Besides, the comparative study of intra-breed populations using immunogenic methods is important for understanding the mechanisms ensuring relative constancy of the rock and its development [10].

Control of genetic variability is of great interest, because line breeding, blood refreshing, and inbreeding can change the homogeneity and heterozygosity of a breed. In this connection, a genetic analysis of the structure of the South kazakh merino sheep herd was carried out. It was found out that 5 allelic systems of transferrin A, B, C, D, E, which in combination can give 15 phenotypes, were found in test sheep of both inbreed types.

We detected 14 phenotypes of AA, BB, CC, DD, AB, AC, AD, AE, BC, BD, CD, CE, DE, and no Tf EE type was detected.

Table 3 - Distribution of sheep by type Tf

Tf	I - group		II - group		Total for the farm	
					Actual	
	n	%	n	%	n	%
AA	7	6,3	7,3	5,5	14,3	5,9
BB	6	3,2	5	3,4	11	3,1
CC	9	7,8	11	8,6	20	8,0
AB	6	5,5	5	4,2	11	4,3
AC	43	35,5	49	36,7	92	36,4
AD	5	4,2	6	4,3	11	4,3
BC	39	32,0	46	34,7	85	33,6
BD	3	2,1	2	1,7	5	2,0
CD	4	3,3	1,2	0,1	4	1,6
∑	121	100	132	100	253	100
I - group	22	17,4	24	18,2	45	17,8
II - group	100	82,6	108	81,2	208	82,2
$\chi 2$						58,1

The frequency of distribution of phenotypes varies markedly depending on the genotype of the sheep. In sheep of the first and second groups, the Tf C alleles (0.54), (0.49); Tf A (0.21), (0.23) were the most frequent; the lowest frequency - Tf E (0.04), (0.06). The medium level is Tf D (0.12), (0.16) and Tf B (0.09) and (0.06), respectively. In terms of gender and age groups, types of transferrin significantly differ in frequency of distribution. But the general trend remains in the direction of the highest concentration in sheep of four types Tf AB (5.5%), BC (32.0%), AC (35.5%), AD (4.2%), whose share in the population is equal to 77.2%. The smallest distribution was observed for types AE, BE, DE (2.3%).

Tf BC and AC types had the highest prevalence in all gender and age groups (67,5 %). In ewes of the second group the tendency remains in the direction of the highest concentration of the four types Tf AA BB, CC and AC, whose share in the population is 66%. The smallest distribution was observed for the types AD, BD, SD (19.3 %). Tf CC and AC types had the highest prevalence in all age and gender groups. From the above data it follows that in terms of Tf types' distribution frequencies, the population of the 1st group is close to the population of the 2nd group, which indicates their genetic similarity.

The 6.2% superiority of heterozygous types over homozygous types in the studied population of I group sheep, and the 13% superiority in II group characterizes the level of polymorphism of the transferrin locus of both breeds. The absence in adult rams of group I, consisting of elite animals, and a weak concentration in other gender and age groups of types Tf AA, DD, EE, AE, BD, BE, CE, DE and in adult ewes of the second type with types Tf DD, CE, DE (6.7%) indicates a lower selective significance of animals with the listed types.

Synthesis of hemoglobin types in South kazakh merino sheep of both groups is controlled by two codominant alleles Hb B and Hb A with the corresponding frequency 0.77, (0.72); 0.23, (0.28) to which the three types of hemoglobin AA, BB and AB correspond. The Hb BB and AB types differ the most in distribution both for the entire population and for individual gender and age groups and vary from 52.3 to 63.0 and from 23.3 to 37.3, respectively (table 3).

The value of $\chi 2$ at the transferrin locus in sheep is 58.1, which indicates a reliable difference between the empirical and theoretical frequencies of genotypes. This means that the population uses a rather intensive selection that disturbed the genetic balance in both populations at the transferrin locus. The value of $\chi 2$ at the hemoglobin locus is 0.06, below the table.

The genetic equilibrium in the hemoglobin locus is maintained, probably due to the low polymorphism. Low polymorphism of the hemoglobin locus slightly reduces the selective significance of this indicator.

According to our data, in the transferrin locus of South kazakh merino sheep superiority of heterozygotes is 3.6%, and in hemoglobin the ratio of these genotypes is almost the same and, accordingly, the degree of homozygosity is higher (Ca = 3.01) than in the transferrin locus (0.72).

The increase in the degree of homozygosity (Ca) is observed in both loci and is accompanied by a decrease in the number of active alleles (and indeed in loci Tf are 5, in hemoglobin loci 2). Accordingly, the increase in its value leads to a decrease in genetic and phenotypic diversity and exacerbates the homogeneity of the population, which is undesirable in the breeding process.

The low polymorphism level of Na (0.24) indicates that the number of active alleles of the population for the Hb locus is less than possible for the Tf locus (1.7). The indicator of the state of the population is the coefficient V, which means the degree of realization of the possible variability, the value of which is lower than the desirable value in both populations.

Typically, breeding animals are selected at an early age based on phenotypic indicators of origin. Early forecasting is particularly necessary in an intensification industry.

In our studies, sheep of the South kazakh merino of group I differ in live weight indices depending on the type of transferrin.

Its indices vary from 60.4 kg (Tf CC) to 35.0 kg (Tf BB) for the group of adult ewes, the difference is 25.4 kg (P>0.99), for the group of lambs the maximum weight can be traced in animals with types Tf BC 55.3 kg and minimum with type Tf BB (36.4 kg), the difference is 18.9 kg (P>0.99).

The difference between the maximum (47.8 kg with Tf CC) and minimum (31.0 kg with Tf BB) indicators was 16.8 kg (P>0.99) for the group of young ewes. It should be noted that for all gender and age groups there is a tendency of higher live weight in animals with types of transferring CC, AC and BC, whose specific weight in the groups is 65.0; 64.7; 61.0% respectively.

Live weight indices of intra-breed type II, depending on the type of transferrin, range from 64.8 kg (Tf CC) to 59.8 kg (Tf AC) for the group of adult ewes, maximum weight for the group of one-year-old ewes is observed for animals with types (Tf BD) of 61.4 kg and minimum weight for animals with type (Tf AB) of 56.3 kg.

The trend of the best live weight is observed in animals with types of transferrin CC, AC, BD, whose specific weight in the groups is 59.0 and 60.0%, respectively. The analysis of wool productivity of sheep of I group depending on types of transferrin shows that animals with types Tf CC, AC, BC, BD were the best performers.

The difference between the best performance of the animals with Tf CC (3.5 kg); Tf AC, BC, BD and the worst performance of Tf AB in the group is 0.8; 0.3; 0.5; 0.7 kg (P<0.95). In II group sheep, the best performance was observed in animals with Tf BC, AD, CD types, whose specific weight was 52.0 %. The difference between the best performance of the animals with Tf BC (2.3 kg); Tf AD, CD, and the worst performance of the group with Tf AD, DD, BD is 0.5; 0.8 kg (P<0.95).

The unreliability of the obtained indicators may be associated with a small number of animals studied, which resulted in a weak variability of the trait and a low level of polymorphic systems used.

It is necessary to note, that advantage, both on live weight, and on wool cutting had animals of both intra-breed types with transferrin CC, AC, BC and BD. This testifies to the possibility of using polymorphic systems as markers for the best productivity of South Kazakh merino sheep. The study of protein content in blood serum has shown that rams, ewes, one-year-old ewes, as well as newborn lambs of I group are inferior by this indicator to their counterparts of II group - by 0.56%; 1.45%; 4.44%; 10.1% and 9.98% respectively.

Thus, the study of polymorphic systems of sheep's blood serum proteins of South kazakh merino of both groups by gender and age groups revealed the presence of certain allele combinations and the ratio of transferrin and hemoglobin genotypes. It was shown that these animals have their specific spectrum of alleles and combinations of genotypes.

On the basis of the obtained results the possibility of using genetic markers of blood in early evaluation of productive qualities of animals was established.

The interrelation of biochemical indices with the main selected features of rams depending on their breed affiliation has been studied. The data show that in general, a closer relationship is observed between live weight and biochemical indicators of experimental animals. In the considered groups of

animals between the content of total protein and live weight a positive relation of medium value (r_s=0.35-0.51) was revealed. Coefficients of correlation of blood biochemical indices with the productivity of rams, a similar connection of this index with wool cutting was found only in the mixed sheep of II group (r_s= 0.38) in the absence of it in animals of I and II groups. High positive correlation between live weight and AST activity was observed in II group animals (r_s=0.62), while I and II group animals had almost the same average correlation coefficients (r_s=0.54-0.51).

We determined the degree of heredity of activity of aminotransferases enzymes by the dispersion method. The inheritance of polymorphic proteins and enzymes is, as a rule, controlled by the autosomal dominant alleles. In this case, the phenotype is the same as the genotype. Polymorphic structures do not change during individual life and are preserved in animals in the set in which they are received from parents with genetic information. The studied feature (AST) is found to be highly hereditable (h^2=0.62-0.68), and its degree of inheritance was much higher than that of ALT. Heredity coefficients of aminotransferases enzyme activity.

Calculation of economic efficiency of the study was based on the determination of the difference between the total actual revenue from the sale of lambs meat and wool less the cost per animal. Pre-slaughter live weight of sheep in "Batay-Shu" LLP turned out to be higher and carcass weight was 31,5 kg, the average revenue from sales of wool in the experimental group was 268 tenge, while for the farm - 220 tenge.

Table 4 - Economic efficiency of research

Indicator	Batai Shu LLP	
	experimental group	on the farm
Pre-slaughter liveweight, kg	61,2	56,3
Carcass weight, kg	31,5	27,7
Produced wool, kg	5,9	5,2
Realization price of 1 kg of mutton, tenge	900	900
Realization price 1 kg of wool, tenge	268	220
Total costs, tenge	21650	21650
The products were sold in total, tenge	29931	26074
Cost price of young sheep growth, kg	21650	21650
Profit, tenge	8281	4424
Profitability, %	38,25	20,43

When comparing the productivity of the breeding groups of sheep with the average flock, in 1-group, the average additional income per sheep was 3857 tenge, and in 2-group - 2282 tenge. These differences are based on the fact that the selling price of products in 1-group amounted to an average of 28002.5 tenge, and in 2-group - 25123.0 tenge. High profits from the sale of mutton and wool were received in the experimental group in 1-group - 29931 tenge and, accordingly, in 2-group - 26264 tenge, at a level of profitability of 38.25 and 26.85%, respectively. The level of profitability on farms is 20,43% and 15,83% respectively.

Conclusion

The study of polymorphic systems of sheep's blood serum proteins of different intra-breed types by gender and age groups revealed the presence of certain allele combinations and the ratio of transferrin and hemoglobin genotypes. It was found that these animals have their specific spectrum of alleles and combinations of genotypes. On the basis of the obtained results the possibility of using genetic markers of blood in early evaluation of productive qualities of animals was established.

When breeding South kazakh merino in the zone of their distribution, it is recommended to use rams of Australian meat merino breed to improve and raise the quality of productivity, because crossbred animals give 8-10% more cutting of wool in washed fibers and have 10-15% more live weight than purebred animals.

References

1. Islamov E.I., E`tologiya yagnyat/ E.I.Islamov, G.A.Kulmanova, B.T.Kulataev, R.Kady`ken, G.M. Zhumagalieva // Texnicheskoe i kadrovoe obespechenie innovacionny`x texnologij v sel`skom xozyajstve. Materialy` Mezhdunarodnoj nauchno-prakticheskoj konferencii, v dvux chastyax Chast` 1, g. Minsk, 24-25 oktyabrya 2019 g. Minsk: BGATU, 2019. S. 285-287.

2. Islamov E.I. Povy`shenie sherstnoj produktivnosti ovcematok porody` yuzhnokazaxskij merinos razvodimy`x v usloviyax TOO «Bataj-Shu/ E.I.Islamov, B.T.Kulataev // FGBNU «Severo-Kavkazskij federal`ny`j nauchny`j agrarny`j centr» Nauchno-prakticheskij zhurnal. NOVOSTI NAUKI V APK. Vy`pusk po materialam VI Mezhdunarodnoj konferencii «Innovacionny`e razrabotki molody`x ucheny`x – razvitiyu agropromy`shlennogo kompleksa», 2018, № 2 (11). - 355 -359 s.

3. Meat production of young Kazakh meat-wool sheep of south kazakh merinos in farm “Batay-Shu”. Islamov E.I., Kulmanova G.A., Zhumanova A.I., Tanaubai U.J. Journal "Studies and Results" ISSN 2304-3334 № 3 (83) (2019), p. 95-100.

4. Islamov E.I. Condition and prospects of sheep breeding development in Kazakhstan / E.I. Islamov, G.A. Kulmanova// 12 th International symposium modern trends in livestock production, Belgrade, Serbia, 9-11 october 2019. P.96-107.

5. Analysis of Genetic Diversity in three Kazakh Sheep using 12 microsatellites. Dossybaev K., Mussayeva A., Bekmanov B., Kulataev B. International Journal of Engineering & Technology. Vol. 7, № 4.38 (2018): Special Issue 38. P. 122-124.

6. Islamov E. I. A Genetic Basis for Improving the Reproductive Qualities and Productivity of South-Kazakh Merinoes / E.I. Islamov, G.A. Kulmanova, B.T. Kulataev, A.I. Zhumanova// Archives of Razi Institute, Vol. 76, No. 5 (2021) 1371-1380

7. Iskakova Zh.K. Sozdanie informacionnoj bazy` geneticheskix resursov grubosherstny`x porod na yuge Kazaxstana s ispol`zovaniem DNK texnologii/ Zh.K. Iskakova, N.N. Alibaev// AKTUAL`NY`E PROBLEMY` SOVREMENNOJ NAUKI. Sbornik tezisov nauchny`x trudov XXXI Mezhdunarodnoj nauchno-prakticheskoj konferencii, 2018, Izdatel`stvo: Obshhestvo s ogranichennoj otvetstvennost`yu "Finansovaya Rada Ukrainy`" (Kiev)

8. Yuldashbaev Yu. A. Sovremenny`e texnologii soderzhaniya ovecz i koz/ Yu.A. Yuldashbayev, Yu. A.Kolosov, B. K.Salaev, N.M.Morozov, V.N.Kuz`min, T.N.Kuz`mina, I.Yu. Svinarev // M.: Lan`, 2021. - 112 s.

9. Produktivny`e kachestva molodnyaka akzhaikskix myaso-sherstny`x ovec myasnogo tipa v usloviyax Zapadno-Kazaxstanskoj oblasti. Traisov B.B., Yuldashbaev Yu.A., Dzhaparova A.K., Esengaliev K.G. Ovcy, kozy`, sherstyanoe delo. № 2. – 2018.

10. POLIMORFIZM BELKOV KROVI MATOK OVECz RAZLIChNY`X FENOTIPOV SEVEROKAVKAZSKOJ MYaSO-ShERSTNOJ PORODY`. Ismailov E.I., Chernobaj E.N., Tregubova N.V. Vestnik APK Stavropol`ya. № 1(37), 2020, 25-28 s.

Е.И. Исламов[1], Г.А. Кулманова[1], Б.Т. Құлатаев[1], И.Е. Мухаметжарова[2]*

[1]Қазақ ұлттық аграрлық зерттеу университеті, Алматы, Қазақстан Республикасы, islamov_esenbay@mail.ru, gulzhan_62@mail.ru, bnar@yandex.ru

*[2] С. Сейфуллин атындағы Қазақ агротехникалық зерттеу университеті, Астана, Қазақстан Республикасы, ilmira_pvl@mail.ru**

ШУ-ІЛЕ АЛАСА ТАУЛАРЫ МЕН МОЙЫНҚҰМ ҚҰМДАРЫНЫҢ ШӨЛ ЖАҒДАЙЫНДА ӨСІРІЛЕТІН ОҢТҮСТІК ҚАЗАҚ МЕРИНОСЫНЫҢ КӨБЕЮ ЖӘНЕ ӨНІМДІЛІК ҚАСИЕТТЕРІН ЖАҚСАРТУДЫҢ ГЕНЕТИКАЛЫҚ НЕГІЗДЕРІ

Аңдатпа

Мақалада әртүрлі меншік нысандар жағдайларындағы селекциялық және асыл тұқымдық жұмыс тәжірибесіне, сонымен қатар селекциялық және асыл тұқымдық жұмыстарды және де жоғары сапалы, бәсекеге қабілетті Қазақстан Республикасының оңтүстік өңірінің тау бөктеріндегі далалық және шөлді жайылымдарды жыл бойы пайдалану

жағдайында қой шаруашылығы өнімдерін өндіру технологиясын жетілдіруге бағытталған қызмет ете алатын ғылыми зерттеулердің деректері көрсетілген.

Әртүрлі тұқымішілік типтегі қойлардың жыныстық және жастық топтары бойынша қан сарысуы ақуыздарының полиморфты жүйелерін зерттеу аллельдердің белгілі бір комбинацияларының болуын және трансферрин мен гемоглобин генотиптерінің ара қатынасын анықтады. Зерттеу нәтижесінде жануарлардың аллельдердің және генотиптердің комбинацияларының пайда болу жиілігінің өзіндік ерекше диапазоны бар екені анықталды. Алынған зерттеу нәтижелері бойынша жануарлардың өнімділік қасиеттерін ерте бағалау барысында генетикалық қан маркерлерін қолдану мүмкіндігі белгіленді.

Ғылыми негізделген асылдандыру әдістерін қолдану нәтижесінде Жамбыл облысындағы «Батай-Шу» ЖШС шаруашылығында шайыры ақ түсті, жуылған таза жүн қырқымы 3,1 кг және таза жүн шығымы 48-50 % құрайтын оңтүстік қазақ меринос қой тұқымының асыл тұқымды австрализацияланған қой отары құрылды.

Кілт сөздер: іріктеу, жұп таңдау, генетикалық өзгергіштік, жүн қырқымы, тұқым қуалаушылық, корреляция, қайталанғыштық, эритроциттер, лейкоциттер, тұқымішілік тип.

Е.И. Исламов[1], Г.А. Кулманова[1], Б.Т. Кулатаев[1], И.Е. Мухаметжарова[2]*

[1]Казахский национальный аграрный исследовательский университет, Алматы, Республика Казахстан, islamov_esenbay@mail.ru, gulzhan_62@mail.ru, bnar@yandex.ru

*[2] Казахский агротехнический исследовательский университет им. С. Сейфуллина, Астана, Республика Казахстан, ilmira_pvl@mail.ru**

ГЕНЕТИЧЕСКИЕ ОСНОВЫ СОВЕРШЕНСТВОВАНИЯ ВОСПРОИЗВОДИТЕЛЬНЫХ И ПРОДУКТИВНЫХ КАЧЕСТВ ЮЖНОКАЗАХСКИХ МЕРИНОСОВ РАЗВОДИМЫХ В ПУСТЫННЫХ УСЛОВИЯХ ЧУ-ИЛИЙСКИХ НИЗКОГОРИЙ И ПЕСКОВ МОЙЫН-КУМ

Аннотация

В статье были отражены данные научных исследований, которые могут служить практике селекционной и племенной работы в условиях различных форм собственности, а также при совершенствовании селекционной и племенной работы и технологии производства высококачественной и конкурентоспособной продукции овцеводства в условиях круглогодового использования предгорных, степных и пустынных пастбищ южного региона Республики Казахстан.

Изучение полиморфных систем белков сыворотки крови овец разных внутрипородных типов по половозрастным группам выявило наличие определенных комбинаций аллелей, а также соотношение генотипов трансферрина и гемоглобина. Было установлено, что данные животные обладают своим специфическим спектром частот встречаемости аллелей и сочетаний генотипов. На основании полученных результатов исследований была установлена возможность использования генетических маркеров крови в ранней оценке продуктивных качеств и свойств сельскохозяйственных животных.

В результате научно обоснованных методов селекции и племенного дела в хозяйстве ТОО «Батай-Шу» Жамбылской области было создано селекционное австрализированное стадо породы овец южноказахский меринос, имеющей жиропот белого цвета, настриг мытой чистой шерсти 3,1 кг, при выходе чистой шерсти 48-50 %.

Ключевые слова: отбор, подбор, генотипическая изменчивость, настриг шерсти, наследуемость, корреляция, повторяемость, эритроциты, лейкоциты, внутрипородный тип.