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## RATIONAL USE OF GENETIC POTENTIAL SHEEP GENE POOL OF DOMESTIC AND IMPORTED IN THE CONDITIONS OF STAVROPOL TERRITORY AND THE SARATOV REGION

### Abstract

An important problem of the modern sheep farming is its traditional breeding to increase the productivity of sheep through the use of the genetic potential of domestic and global gene pool. Science-based application of modern breeding methods, perfected production technology will contribute to a higher efficiency of the selection process. One of the most effective methods of increasing production and improving the quality of production of sheep breeding, especially lamb is interbreeding farm animals, including those based on the phenomenon of heterosis manifested in crossbred animals for some economically useful traits.

The above was the basis to assess effectively, use of the genetic potential of domestic sheep breeding in Saratov region and manufacturers of domestic and imported commodity herds in the gene pool of the Stavropol region to enhance and improve the quality of meat and wool productivity based on the study of a number of phenotypical signs.

**Keywords:** *introductory crossing, industrial crossing, sheep breeds: Caucasian (CA), Stavropol (ST), Manych Merino (MM), the North Caucasian meat -wool (NC), the East Frisian (EF), Edilbay (ED), Texel (T).*

Currently, the opportunity to increase economic efficiency and competitiveness of fine-wool sheep Russia. The solution of this problem by creating new breeds of sheep, combining high meat and good wool productivity adapted to breeding in areas of traditional fine-wool sheep of the country, can be calculated for the long term [4, 5, 6].

The diversity of the breed genotypes concentrated in the Stavropol region, allows farmers to choose the different regions which live animals with valuable genetic traits for their effective use in the respective climatic conditions [1].

The most radical and effective way to increase production and improve sheep product quality is interbreeding farm animals, based on the phenomenon of heterosis manifested in crossbred animals for some economically useful traits [7, 9, 10, 11, 12].

In this article we will focus on research, obtained experimentally performed in the tribal economy of the Saratov region and Stavropol territory commercial farms on the example of different variants of sheep crossing.

To increase the wool productivity and especially improve physical and technical properties of the wool of sheep breeds in the conditions of the Stavropol Joint Stock Company «Novaya zhizn» Novouzensk district of Saratov region was used introductory crossbreeding with sheep breed manych Merino imported from breeding farm named after Lenin Stavropol Territory.

Table 1 – Efficiency physical and technical properties of merino wool half-blooded manych Merino x Stavropol local reproduction of sheep

Indicator	Group	
	F <sub>1</sub> crossbreeds	local Stavropol
Live weight, kg	50,7±0,05	48,9±0,04
Wool clip, kg: unwashed clear	5,11±0,09 2,72±0,06	4,98±0,11 2,56±0,07
The yield of pure wool,%	54,7	51,4
The fineness of the wool, micron	21,6±0,12	21,4±0,10
Length hair, cm	9,21±0,05	8,52±0,04
Tenacity cN / tex	6,84	6,65
Wool coefficient g / kg	55,0	52,3

The average live weight of half-blooded ewes was higher than local Stavropol – 3,7% (Table 1). If greasy wool shearing difference between crossbred and purebred ewes Stavropol averaged only 2,6% ( $P < 0.95$ ), at the expense of higher yields of pure wool (an average of 2.81 abs. percent) of crossbred animals was obtained in greater than 9,0% on average ( $p > 0,999$ ).

Since manufacturers manych Merino breed characterized by high technological quality of wool, then from Table 1, it follows that their daughters (the half-blood) had a length of wool on average 9,21 cm, and the Stavropol breed ewes were superior local reproduction by 8,1% ( $P > 0,99$ ). On density wool (wool fibers on the number 1 cm<sup>2</sup> skin sides) superiority averaged 2,4% ( $P < 0,95$ ). Differences in fineness was virtually no wool ewes of all groups was assigned to the 64 quality. Increased length and thickness of wool, is positively correlated with the release of pure wool, provide higher in hybrids pure wool fleece. It should be noted that all the half-blood and thoroughbred ewes had white wool grease of high quality.

In the future, the object of our research will be to obtain offsprings, derived from the half-blooded ewes and rams Stavropol breed, imported breeding farm Stavropol territory: breeding plant «Pravda» (I group), breeding plant «Vtoraya pyatiletka» (II group) and breeding plant «Sovietskoye runo» (III group). As a control, offsprings the Stavropol breed local reproduction.

Since in this experiment the half-blood ewes had pre-property on wool productivity and imported manufacturers lead-ing breeding farm also surpassed peer local reproduction practically in all respects, then, the theoretical predictions obtained by ¼-blood manych Merino animals should have more high parameters of live weight without losing dignity Stavropol breed and manych Merino wool in quality.

When analyzing certain patterns can be identified: the birth of the differences between offspring ¼-blood on purebred manych Merino and Stavropol breed in live weight, on average, 3,51% ( $P < 0.95$ ).

This is consistent with the position that the birth of the live weight of the fetus to a greater extent determined by the live weight of the mothers, who had half-blooded mares was higher than that of pure-bred ewes of Stavropol Volga population at 3,57%.

Lower level of milk production of crossbred ewes are not allowed to fully realize the genotype in the live weight of the offspring. At 4 months of age at weaning of lambs from ewes live weight animal groups I and II, originating from crossbred ewes and rams Stavropol breed breeding farm «Pravda» and «Vtoraya pyatiletka», was slightly lower than that of local peers Stavropol breed (on average 21%), and only the animal group III (manufacturers breeding farm «Sovietskoye runo») have equal weight with local peers (22,38 and 22,34 kg).

Table 2 – Dynamics of live weight of animals of the Stavropol breed and hybrids with manych Merino

Group	Age periods, months			
	at birth	4	8	14
	live weight, kg			
I	3,80±0,15	21,84±0,18	33,80±0,28	38,20±0,24
II	3,84±0,20	21,90±0,24	33,98±0,17	38,65±0,35
III	3,85±0,21	22,38±0,14	34,14±0,12	38,85±0,18
IV	3,70±0,12	22,34±0,34	33,20±0,24	36,51±0,24

At 4 months of age at weaning from their mothers chose to follow-up on the animal 25 from each group, which contained a single flock. The growth rate of offsprings in this case was due only to the genetic potential of parental forms. Because the uterus (mongrel) and sheep (Stavropol) had superiority in body weight over the local, then the offspring showed a significant difference, averaged 5,55% ( $P > 0,95$ ). Maximum body weight was observed in offspring productivity in breeding farm «Sovietskoye runo». Superiority over similar options ewes selection of parent pairs, but manufacturers in «Pravda» and «Vtoraya pyatiletka» was 1,30%, and over the local ewes reproductions 6,27% ( $P > 0,99$ ).

Thus the use of manufacturers in the half-blooded on manych Merino ewes was an increase in the productivity of the local offsprings within 2,10-6,27%. The greatest influence manufacturers breeding farm «Sovietskoye runo».

When comparing bodyweight of animals in 14 months of age, obtained from different sheep breeding plants of the Stavropol territory, the Stavropol breed ewes and half-blood on manych Merino crossbred offsprings  $\frac{1}{4}$ Merino  $\frac{3}{4}$ Stavropol some superiority, was 1,8% ( $P < 0,95$ ) compared to control animals, governmental 5,54% ( $P > 0,95$ ). A comparison of the leading (III group) shows a similar trend: crossbred exceed 1,4% purebred and control - on 6,27% ( $P > 0,99$ ).

The results obtained in this experiment, hybrids  $\frac{1}{4}$ Merino +  $\frac{3}{4}$ Stavropol had «in itself» 50% of blood obtained through the leading manufacturers of Stavropol breed herds, including virgin type of plant breeding «Sovietskoye runo», 25% of the blood manych Merino and 25% of local sheep blood Stavropol breed. This combination should have a positive impact on their wool productivity. Greasy wool fleece in hybrids-governmental fluctuated between 4,56-4,80 kg, which is significantly higher ( $P > 0,999$ ) at 8,87% than the control peers. The yield of pure wool of crossbred animals averaged 56,1%, or 3,5 abs. percent higher than that of purebred animals Stavropol local reproduction.

Increased wool yield and yield of pure fiber caused substantial and significant superiority over the control of hybrid peers - an average of 16,0% ( $P > 0,999$ ).

When comparing hybrids  $\frac{1}{4}$ Merino +  $\frac{3}{4}$ Stavropol from different manufacturers breeding farm leading position in pure wool shearing (2,71 kg) took the descendants of sheep breeding farm «Sovietskoye runo».

Thus, the sheep-breeding plant manufacturers «Sovietskoye runo» give maximum effect in improving the Volga sheep population.

It should be noted that sheep producers Stavropol reproduction had a great influence on the length of hair. On average, the first three groups animals have a length greater than 7,8% and density of 4,2%. The tendency of a decrease in the fineness of wool - in all groups 64 match quality.

Hybrid animals were characterized by the best wool in the fleece of the equation, in fact, length and tensile strength. The resulting indicators give reason to believe that such a selection of parental pairs enhances equation wool in fineness, in the fleece (on different parts of the body). It describes all the sheep as typical representatives Merino areas that need to be considered when implementing wool.

Economically most advantageous conditions in the Saratov region turned half-blooded offspring of ewes (C x MM) and manufacturers breeding farm «Sovietskoye runo», ensure the profitability of 19,5%, which is 2,1 abs. per cent more than the same age tribes-mills "Truth" and «Pravda» and «Vtoraya pyatiletka» and 8,0 per cent local reproduction.

Modern conditions due to the successful development of sheep meat productivity of sheep, the development of methods of increasing and improving it is essential [2, 3, 8, 13].

In connection with the above definition of the most effective options for the industrial crossing fine-wool sheep herds trade with rams-time personal breeds and productivity trends of domestic and imported breeding will help to solve urgent problems of increasing the competitiveness of commercial sheep.

To this end, on the basis of commodity sheep herds Stavropol (breeding farm «Pobeda» and breeding farm the «Rodina» Krasnogvardeisky district, breeding farm «Novomarevsky» Shpakovsky area) for crossbreeding as a parent bases used sheep fine-wool Caucasus breed with domestic sheep (manych Merino, South Caucasus South steppe type, North Caucasian meat - wool, edilbay) and import (East Frisian, tech-sel) selection.

In our experiments the conditions of feeding and housing of experimental animals were the same in each sector, then, in our opinion, the observed differences in productivity associated with complex genetic information obtained offspring from diverse selection of parental pairs as a result of cross-breeding, based on the manifestation of the effect heterosis.

Revealed that in some cases, hybrid animals were significantly superior to pure-breed, and their characteristic high variability of economically useful traits opens up great opportunities for breeding.

Analysis of integrated growth and development - live weight and average daily gain - revealed the developmental changes of the studied parameters in lambs of different variants of selection, as well as to determine their differences due to breed at-sory. So, to explore options for selection revealed a general pattern, the certificate ments on reliability superiority over pomesnogo young purebred peers largest live weight. This figure is from the descendants of crossbred new rams (MM815h214hKA, KA36h5- 61hKA) was higher than that of purebred peers at age one to 3,4-10,1%; daughters SKhKA, MMhKA – by 3,7-7,4%; crossbred lambs genotypes SKhKA, ThKA, EDhKA – 7.1; 7.6; 11,6%; SKhKA descendants, VFhKA – on 5,4-9,8%.

Effect of feeding conditions manifested in the fact that the crossbred animals of different types of gene-by the end of fattening recorded higher absolute values of average and increments in body weight compared to purebred animals. So, by the end of fattening crossbred young superior purebred peers largest live weight: descendants MM815h214hKA, SKhKA, MMhKA - by 5,1-9,0% ( $P < 0.01$ ;  $P < 0.001$ ); animal genotypes and SKhKA VFhKA – by 5,4-9,4% ( $P < 0.01$ ); SKhKA hybrids, ThKA, EDhKA - on 5,6-13,4% ( $P < 0,05$ ). Better able to crossbreed sheep of different variants of selection-effectiveness more actively transform food into production and led to the largest value of average growth.

Identification of patterns in the study of young sheep fattening properties of time-mating variants reflected when considering the quantity and quality-governmental indicators of meat productivity. Revealed the superiority of hybrids compared to purebred beef youngsters on the quality-properties: descendants MM815h214hKA SKhKA, MMhKA largest carcasses – to 4,9-12%, slaughter yield – at 0.5 - 1.4 abs. percent; young genotypes SKhKA and VFhKA – paired by weight carcasses – 9.8 and 16.3%; slaughter weight – 10.1 and 16.6% ( $P < 0.01$ ;  $P < 0.001$ ), slaughter yield – 1.84 and 2,57 abs. percent; crossbred animals SKhKA, ThKA, EDhKA largest pair of mascara – 14,6; 22,6 and 26,4%.

Crossing the Caucasian breed ewes with rams edilbaevskimi influenced the ability to synthesize internal fat of the obtained pomesnogo offspring, which is reflected in the value of carcasses and providing greater slaughter weight compared to the young of other genotypes (SKhKA, ThKA and KAhKA) 10,3% - 27,4%, as well as the magnitude of the output of beef, prepared the 2,1-6,9 abs. percent.

Economic evaluation of rearing studied variants of selection in terms of commercial farms of Stavropol territory has revealed the superiority of hybrid offspring of purebred peers on the basic criteria of economic evaluation will provide an increase in profitability to 10,6%.

**Conclusions.** As the results indicate the superiority of the crossbred animals, then we can say that a significant increase and improvement of sheep herds meat commodity can be achieved through the efficiency of different selection variants of fine-wool breeds of ewes with rams meat and wool and meat breeds of the aborigin and import selection. Manufacturers of manychMerino should be used to

produce hybrids with the adjusted finer hair length and diameter of the wool fiber, its high shearing with high meat productivity. For the production of lamb must cross with fine-wool sheep edlbay ewes intended for culling with the implementation of hybrid offspring in the first year of life without further use in the selection process.

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#### ТҮЙІН

Мақалада кейбір фенотипикалық белгілері негізінде Ставрополь өлкесіндегі тауарлы табындағы қойлардың ет және жүн өнімділік қасиеттерін жоғарылату және жақсарту үшін Саратов облысы асылтұқымды қой шаруашылығында өсірілетін және отандық пен импортты генофондты аталық кошқарларының генетикалық потенциалын пайдаланудағы нәтижелеріне баға беріледі.

#### РЕЗЮМЕ

Дана оценка результативности использования генетического потенциала баранов отечественной селекции в племенном овцеводстве Саратовской области и производителей отечественного и импортного генофонда в товарных стадах Ставропольского края для повышения и улучшения качества мясной и шерстной продуктивности на основе изучения ряда фенотипических признаков.