

ELITE TYPE OF SHEEP OF MOLDAVIAN TSIGAIIE OF ALEXANDERFELD

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Abstract

The purpose of research - creating a new type of sheep tsigaie which would ensure a high production of wool-meat-milk. It was used the method of intraracial crossing with sheep breed of Tsigaie of indigenous type (mother base) with intraracial rams of Crimean Tsigaie and Tsigaie Priazov. After five levels was created a sheep population named new type of Moldovan Tsigaie of Alexanderfeld with productive capacity much higher then indigenous sheep type of tsigaie, exceeding the standard requirements for wool production with 46.8%, body weight with 32 %, milk production with 57%. The created population has a specific genotype with a high frequency of blood antigens Cb, II, Bb, Aa, Ca and Ma. Genealogical structure of the new type of sheep include two elite lines.

Key words: type, sheep, wool, meat, milk.

INTRODUCTION

Breeding of Tsigaie sheep Budjac steppe of Republic is dated to the second half of XVIII century. These, according to researches of F. V. Iliev (1966) were brought in south of the republic by Bulgarians and were used mainly to produce wool and milk. Under the influence of socio-economic, climateric factors (nutrients) and the traditions of indigenous people on the exploitation of this sheep breed and recovery of obtained products, was formed its ecological and morfoproductiv (domestic) type of sheep of tsigaie. Many researchers in different periods (T. Iliev, 1969; F. Dovbuș, 1974; V. Babenco et al. , 1988) found that sheep of tsigaie of coresponding type is characterized by the indices of production relatively low, including the habitus, but has an increased resistance to specific conditions of republic south area. Because of world trends of exploration and improvement of sheep, will be taken the direction of increasement of milk and meat production, skills improvement of local (native) breed, maintenance and development of sheep genofond. Since 1962 have been initiated works in order to improve and create a new type of sheep of tsigaie with highest potential for meat-wool-milk, keeping at the same time adaptive capacity of this breed.

MATERIALS AND METHODS

As a biological material for research and improvement has served the initial efective of sheep flock of Agricultural Production Cooperative "Elita-Alexanderfeld", Cahul district. After composition (genotypic and phenotypical), the flock is quite diverse, comprising both sheep Tsigaie-bred of pure type – indigenous bred type - for wool-milk, also sheep resulting from previous crosses of tsigaie sheep of indigenous type with merino rams, and also hybrids (metis) from crosses of tsigaie x Tsushca and merino x Tsushca of different generations. As breeder material were used rams of intraracial types well known in tsigie breed - for wool-meat (Crimean type) and meat-wool (type Priazov), other rams from initial flock were removed of breeding (F. Dovbuș, 1968).

Works were done in five consecutive stages: I (1962-1976), II (1977-1986), III (1989-1996), IV (1996-2000). Each phase is completed by strengthening character, using the sheep breeding in „itself” method "itself" according to time requirements. In improvement process were used combinations of classical methods of sheep breeding of pure breed and through crossing with recombination of breeder material, according to the goal and necessity of correction of one or another character. So rams of crimean type

participated in phases I and III and type Priazov at stages II, IV and V.

Priority directions of improvement process of indigenous Tsigai sheep and creating new type were: body mass increasing, exterior indices improvement, higher meat production (young sheep precocity and carcasses quality), improvement of wool production quality (fineness, uniformity, length, extension) and quantitatively, especially in first two stages, maintaining and increasing milk production. Basic methods and procedures which were used: testing and selecting rams after their origin, phenotype and genotype, performance evaluation and selection of young sheep at weaning (3,5-4 months) after their body mass, exterior and length of wool locks; implements and selection of young sheep at age of 12 -14 months after exterior type, body mass and characteristics of wool sheepskin; sheep

selection after the method of independent limits to the three products – wool, body mass (potential for meat production) and milk production, creation of selected groups by applying different selection intensity; directed reproduction of requested sheep type and creating of elite lines. Since 2000, requested sheep type is reproducing in "itself" with application of high selection intensity, particularly for remount rams.

RESULTS AND DISCUSSIONS

After the realisation of improvement five steps by using genitorial material (rams) of intraracial types for wool-meat and meat-wool, works were finished by breeding in „itself" of sheep with a genotype consisting of the three blood morfoproductive types shares of Tsigai breed (fig. 1).

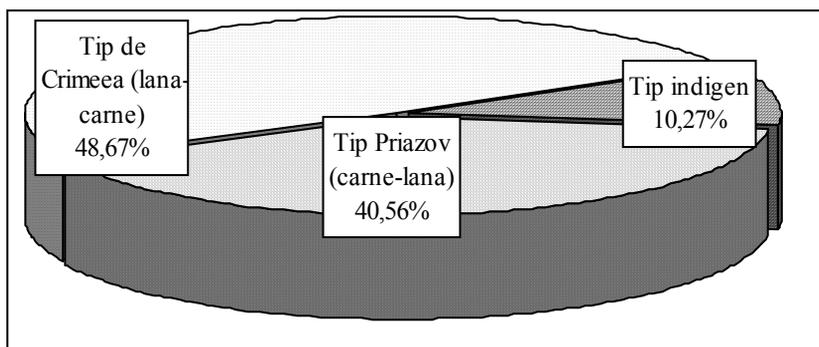


Figure 1. Blood shares of different morfoproductive types in the new type Tsigai sheep (wool-meat-milk)

This synthetic genotype, as is shown in figure 1, with 10,27% blood share from Tsigai – indigenous type for wool-milk, 48,67% of Tsigai - of Crimean type for wool- meat and 40,56% of Tsigai -- type Priazov for meat-wool allows the realisation of high mixed productivity.

In this context, according to research to improve the breed of Tsigai made by M. Jireacov, V. Lușnicov (1997), A. Karpova (2002), new type (sheep) creation inside of the breed with specific unique genotypes for maintaining the genetic variability of the breed, ensure its development through recombination of these genotypes and reproduction of individuals corresponding to improvement direction. It is important to note

that research for improvement of local breed of Tsigai sheep, were done at different stages and in other countries, where these sheep are bred, so remarkable results were obtained (A Mihailov., Et al., 1987; Cinculov M., M Krajnović, I Pihler., 2003, Iațchin V., 2004; and others)

Applying the classical methods of effective improving by combining the proper elaborations with use of differential selection intensity, according to improvement value of gender and age groups contributed significantly to improving the initial flock of sheep but the new-created type being better after production indices, comparing to standard Tsigai breed in Republic, and to the flock level at an earlier stage of work (Tab. 1).

Table 1.
 Comparative values of production indices characteristic to the new type comparing to initial flock

Indices	Gender and age groups		
	sheep	Ewe sheep (12-14 months)	lambs (12-14 months)
Initial flock (after F. Dovbuș, 1968)			
Body mass, kg	41,8	30,0	-
Wool production, kg	2,90	3,68	-
Wool length, cm	-	8,41	-
Standard of Tsigaiie breed (Implements instructions of Tsigaiie sheep breed, Chișinău, 1997)			
Body mass, kg	45,0	35,0	40,0
Wool production, kg	4,0	4,0	4,0
Wool length, cm	8,0	8,5	8,5
Actual flock of the new elite type			
Body mass, kg	54,2	46,07	63,4
Wool production, kg	4,74	5,58	8,25
Wool length, cm	9,0	13,9	14,3

According to results presented in the table, there is an essential superiority of the new elite type flock comparing to initial flock after all analysed indices, especially after the body mass and wool.

High productivity of the new type sheep, is in concordance with corresponding values of sheep exterior, also confirmed by measurements, and respectively body indices (Table. 2). After the analysis of body development after the main measurements can be said that the new type of Tsigaiie sheep are with high waist, elongate and massive body, with well pronounced wide and depths. Height at top is 77.8 cm for breeding rams and 70.0 cm for adult females (ewes), oblique length of the trunk is 93.1 and 82.5 cm corresponding to gender and thorax perimeter respectively 100.9 and 92, 6

cm. Also other body measurements are well-developed at rams for breeding and ewes. It is obvious also that adult sheep of new type for meat-wool-milk compared with those of indigenous type for wool and milk (widespread in the southern republic) where all measurements are higher, especially after the height of the withers and to rump length of the oblique trunk. These features to print a massive body, well developed in length and depth. It is obvious also that the adult sheep of new type for meat-wool-milk compared with those of indigenous type for wool and milk (widespread in the south of republic) where all measurements are higher, especially after the height at top and cruppers, oblique length of trunk. These features print a massive body, well developed in length and depth.

Table 2.
 Principal values of measurements and body indices of new type Tsigaiie sheep, (M±m), cm

Specification	Rams (new type wool-meat-milk)		Sheep	
	breeding	Ewe rams	New type wool-meat-milk	Indigenous type wool-milk
Height at top	77,8±0,7	72,7±0,5	70,0±0,5	64,6
Height at cruppers	80,0±0,8	75,3±0,7	73,1±0,4	65,3
Thorax width	25,2±0,5	23,7±0,6	21,7±0,4	20,1
Thorax depth	35,6±0,3	31,8±0,6	32,3±0,3	30,5
Thorax perimeter	100,9±1,2	94,1±1,1	92,6±1,0	84,0
Oblique length of trunk	93,1±0,8	85,2±1,3	82,5±0,6	72,4
Whistle perimeter	10,1±0,1	9,8±0,2	8,4±0,1	8,28
Body indices,%:				
format	119,7	116,8	117,9	
thorax	71,5	73,5	67,2	
bones	13,0	13,1	11,9	
compact	129,1	129,4	132,4	

Body indices, demonstrate a relatively long body with well developed thorax at rams and ewes. Values of compacted index confirms skills for mixed productivity of these sheep.

New type Tsigai sheep has advantages over the standard breed from republic after wool production on average with 46.8% and body mass with 32.0%. According to our research of milk production of new type sheep established that milk production, throughout period of lactation, was on average 118.2 kg or more than 2 kg milk to 1 kg of body weight at females. Females already in first lactation has a good lactogen potential and capacity to grow (nurse) two lambs.

The average milk production of primipar sheep was 94.9 ± 3.96 kg (70,14-139,35 kg). Results obtained by us in development of new production capacities for mixed production of Tsigai sheep confirmed that among the three productions there is no physiological antagonism and selection process support with appropriate sheep alimentation, allows achieving intended results (V. Taffeta, I. Vintila S. Zamfirescu, 1997),

After investigating the meat production skills of new-type sheep (rams of 8-9 months) were determined high values statistically authentic difference compared with the same type of indigenous rams of indigenous Tsigai sheep (tab. 3).

Table 3
 Meat production of young rams of the new type for wool-meat-milk comparing to indigenous type for wool-milk

Specification	Rams of 8-9 months (new type wool-meat-milk)		Rams of 9 months (indigenous type - wool-milk, after I. Mogoreanu, 1985)	
	M±m	%	M±m	%
Weight at slaughter, kg	**35,6±0,9	-	30,70±0,48	-
Carcass weight, kg	**16,3±0,6	100	13,17±0,62	100
Internal fat weight, kg	*0,453±0,06	2,78	0,75±0,09	5,69
Slaughter yield,%	45,8±0,5	-	44,23±1,41	-
In carcass: meat, kg	***12,3±0,23	80,0	9,02±0,40	75,12
bones, kg	3,10±0,25	19,0	2,75±0,14	24,07
joints, kg	0,134±0,05	1,0	-	-
Ratio meat:bones	4,21:1		3,28:1	

*P≤0,05; **P≤0,01; ***P≤0,001

The results of young rams slaughtering at the age of 8 - 9 months (no special fattening) from the new type of sheep, shows that from Tsigai rams of the new type with average body mass of 35.6 kg, are obtained carcass with weight of 16.3 kg, return of the slaughter is 45.8%. After taking the bones out of carcass, was established that carcass contains 80% meat, 19% bones and around 1% joints, and ratio meat: bones is 4,21:1. Obtained carcasses have a good commercial aspect. Comparing obtained indices with results from slaughtering indigenous type rams for wool-milk, obtained by previous research of I. Mogoreanu (1985), was found an authentic statistical superiority ($P \leq 0,05-0001$) for rams of new type of Tsigai sheep.

Phenotypic particularities of new type of Tsigai sheep, existing significant differences compared to indigenous type of sheep breed for wool-milk is explained by genetical specific population concerned, as a result of the initial flock improvement. Therefore, applied methods and genetic material used in improvement process, conditions offered for

this genotype, contributed to create a whole new type of sheep. Immunogenetical researches showed that hereditary basis of the new type of sheep is composed of 38 genotypes, the occurrence of which is due to the combination of those 20 alele.

Number of genotypes varies according to the blood groups, such as A - includes 8 genotypes, B and C each have 9 genotypes, and D, M, R I - 3 genotypes in each. Systems A, B and C include 4 locus and in the other there are 2 effective locus. More frequent type of alele at the new type of Tsigai sheep are: A - A (0,582), in B - B (0,693), in C - C (0,718), D - D (0,682), in M - M (0,616) in R - R (0,584) and in I - I (0,702). The degree of homozigoted into the blood groups (%): A - 42.73, B - 49.81, C - 48.94 D - 68.0, M - 61.4, R - 53.51; I -- 63.51, and the general degree of homozigoted is 52.98%, which confirms a hereditary strengthening corresponding to the population.

After effective alele (Na) was established that the highest values are in A, B and C systems - 2,340, 2,008 and 2,034 accordingly, followed by R (1,869), M

(1,629), I (1,575) and D (1,471). Total efficiency per locus is – 1,888.

Except genetic particularities of the new type of sheep also was ascertained a difference in antigens frequency in the system of blood groups of the original type (indigenous for wool-milk) and intraracial types Crimean and Priazov used as improvement material to create a new type for wool-meat-milk. According to obtained results, was determined that in improvement process, the new type of sheep took from Crimean type high frequency

antigens Bb (0.87) and Ca (0.65) and from the type Priazov low frequency antigens Be (0.29). In process of selection, at created sheep population Bd and Bi antigens disappeared which were quite common (0.72, and 0.53) in the initial flock.

Genetic improvement of initial flock of sheep and a new type of sheep pan with specific hereditary characteristics, is confirmed by genetic distance from the initial population and types amelioratoare (tab. 4)

Table 4
 Genetic distances between types of Tsigai sheep participants in improvement process

Tsigai sheep breed	Code	1	2	3
New type for wool-meat-milk	1			
Crimean type for wool-meat	2	0,1729		
Type Priazov meat-wool	3	0,2567	0,3140	
Indigenous (initial) wool-milk	4	0,2706	0,3250	0,3141

Thus, from the analysis presented in table and genetic distance calculations is found that the new type of sheep and wool-meat type (Crimean) genetic distance is 0.1687, wool-meat type (Priazov) is 0.3002 and indigenous type for wool-milk respectively 0.3120.

CONCLUSIONS

1. New type of elite Tsigai sheep created in our republic, is an improved sheep population with specific phenotypic and genotypic features which ensure the achievement of skills for a mixed productivity, and the genetic improvement of initial flock of tsigai sheep is confirmed by immunogenetical research results, determining genetic distances among morphoproduative Tsigai sheep types participated in improving of indigenous Tsigai sheep for wool-milk.

2. Tsigai sheep of elite new type is valuable genetic material for increasing productive capacity of indigenous type of Tsigai sheep breed, can be successfully used to maintain genetic variability and development of Tsigai sheep breed in the world.

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