

ECONOMIC EFFICIENCY OF GROWTH AND EXPLOITATION OF MOLDAVIAN KARAKUL SHEEP

Ion BUZU

Institute of Zoology of Academy of Science of Moldova,
MD-2028, Chişinău, Academiei, 1 street, Republic of Moldova

Corresponding author email: ionbuzua@mail.md

Abstract

The aim of this research was to estimate the economic efficiency growth and exploitation a new type of Moldavian Karakul sheep in the Republic of Moldova condition. The research was conducted on Moldavian Karakul sheep at the flock of National Institute of Animal Livestock and Veterinary Medici, Maximovca village, Anenii Noi district, the Republic of Moldova. The skins qualities of Karakul lamb have been evaluated according to the Guidelines of evaluation marks Karakul sheep with improve principles in the Republic of Moldova. Assessing the qualities of salted-dried skins and sorting it was been effected according to standards. The sheep body weight was been determined with technical scales at different times and at different ages of young sheep, as well as, adult sheep - annually, in the autumn before the beginning of campaign mating. The ewes milk production has been determined by control milking twice a month during the whole lactation. Economic efficiency of growth and exploitation of new type of sheep, compared to classic Asian Karakul sheep, as well as and with sheep from local old race Tusca was been calculated, according to the formula:

$$Ee \frac{V \cdot S}{100} K$$

where:

Ee – the economic effect calculated to one animal per year in MD Lei;

V – production value obtained from one sheep per year, expressed in units of measure;

S – the spore of obtained production, as compared with controls, expressed in%;

K – the constant spore coefficient of diminishing production, conditioning by additional costs to obtain this spore.

As a result of the research showed that the new type of Moldavian Karakul sheep has advantages compared to the classical type of the Asian Karakul, the body weight of breeding rams - with 53.1%, at the 18 months rams - with 78.5%, at the 6 months rams -with 42.5%, at the ewes - with 28.4%, at the 18 months young ewes -39.2% at the 6 months young ewes - with 29.2%, to milk production - with 53.2% on the skin surface - with 35.1%, giving way at least with share skin sort I – with 15%. Economic efficiency, resulting from the capitalization of meat production (live weight) to these groups of animals constitutes, respectively, 940.5; 239.2; 357.0; 91.5; 211.5 and 164.2 lei / head / year, the ewes milk production - 199.5 lei / head / year and lower after skin sort - with -16.8 lei / head / year. Overall, after all productive characters, new type of Moldavian Karakul sheep has economic efficiency to the race Asian Karakul equal to 274.2 lei / head / year. The Moldavian Karakul sheep possess and economic advantages to the initial race Tusca after skin quality - by 4.5 times, the rams body weight - with 53.2%, of ewes - by 30.5%, giving way after milk production -with 29 1%. In total, the economic effect of the new type of sheep, compared to race Tusca, constituted 156.3 lei / head / year.

Key words: economic efficiency, new type, Karakul sheep, skin, milk, meat.

INTRODUCTION

In the world there are over 600 known race of sheep production specialized in different directions of production, such as for wool, meat, milk, wool-meat, wool- meat- milk, milk-skins etc (Вениаминов А.А., 1984). In different regions of the world were created by humans, grown and spread those race of sheep than, at different stages of development of human society, satisfying the demands of society, they corresponded most appropriate traditions and

local pedo-climatic conditions. Throughout the ages, race of sheep have been improved, modernized and specialized. Thus, well-developed European countries (England, France, Holland, Germany), pedo-climatic favorable conditions for intensive technologies, was spread specialized race for meat, milk, meat-wool and prolific. In undeveloped countries (Africa, Asia), with difficult pedo-climatic condition for intensive technologies, were been created and spread a large number of race with mixed ability production, late, with

low performance of milk-meat-fat, wool -milk-meat, wool -milk- skins etc.

Following, in the advanced stages of human society development, to cover the increasing requirements on the world market some specific sheep products, were created and in Asian countries (in extensive condition) performing race, specialized for skins (Karakul), meat-fat (Ghisar), wool (Australian Merinos) and others. The Karakul sheep were spread around the world, but they acclimatized and exploiting effectively in countries and regions with huge areas of natural pastures, even barren of desert and semi desert (Central Asia, Africa), but extensive climate that allows their maintenance during the entire calendar year without capitals spaces, with minimal expense circulating costly, where sheep are grown not only to ensure the pressing needs of the rural population, but also to obtain an income from the sale of skin at the fur international tender.

In the Republic of Moldova, the sheep breeding is one of the oldest and most traditional sectors in the livestock sector. The sheep ensure the food security of the rural population with dairy products (cheese, curd) and meat, and processing industry – with raw materials (skins, furs, hides, wool). The sheep efficiently use natural grassland in food and plant remains on the stubble fields of harvested crops. Therefore, the sheep breeding is a accessible branch and indispensable for the local population and importance to the national economy.

In the period after World War II (1947-1979), the local race of Tusca sheep was, practically, substituted by Karakul race thru crossbreeding absorption en masse (Богданович Н.И., 1957; Богданович Н.И. и др., 1979, 1982, 1983, 1984; Ильев Ф.В., 1957, 1957a, 1969, 1976, 1984, 1966, 1966a; Ильев Ф.В. и др., 1966, 1981). As a result of these crossings it has been observed that the level of milk production and body weight (meat production) of local Karakul sheep began to decrease.

Research the economic value of the selection character (Buzu I. et. al., 2014) have been demonstrated that while the retail price of skin on domestic and foreign sales have stabilized at 30-40 years ago, and price at the sheep food products (meat, cheese) increased during this period by 5-10 times, growing the Karakul sheep without enhanced skills of meat and milk

becomes unprofitable in the Republic of Moldova.

Considering the fact that in recent decades, the sheep in our country is growing not only for the pressing needs of the families of the rural population, but also to obtain profits for farmers, then antique Karakul sheep, with low skilled of meat and milk, no satisfy the economic requirements of society. To increase economic efficiency of the sector in the Republic of Moldova has been created a new type of Karakul sheep with mixed ability of heightened production for skins, milk, meat.

In this context, estimating economic efficiency of growth and exploitation of the new type of Moldavian Karakul sheep in the Republic of Moldova condition presents an actual problem.

MATERIALS AND METHODS

The research has been conducted on the Moldavian Karakul sheep from the flock of National Institute of Animal Livestock and Veterinary Medicine in Maximovca village, Anenii Noi district, the Republic of Moldova.

The skin qualities of Karakul lambs were been evaluated, according to the Guidelines of evaluation marks of Karakul sheep with amelioration principles in the Republic of Moldova (Buzu et al., 1996). Assessing the qualities of salted-dried skin and sorting them was been performed, according to the standards in force in the Republic of Moldova: ГОСТ 8748-70 – *Каракуль чистопородный черный невыделанный, технические условия* (1970); ГОСТ 2865-68 – *Каракуль чистопородный серый невыделанный, технические условия* (1968); ГОСТ 11124-65 – *Каракуль чистопородный сур невыделанный, технические условия* (1965); ГОСТ 11124-77 – *Каракуль чистопородный цветной невыделанный, технические условия* (1977); ГОСТ 10327-75 – *Каракуль-метис всех цветов невыделанный, технические условия* (1975); ГОСТ 10701-84 – *Каракульча чистопородная и метисная невыделанная, технические условия* (1984).

The sheep body weight was been determined by technical scales at different times and at different ages of young sheep, and adult sheep - annually, in the autumn before the beginning of

mating complain, according to the methodology perfected by us (Buzu I., 2012).

The ewes milk production was been determined by the milking control twice a month during the whole lactation by Nica T. method (1937, 1940), improved by us (Buzu I., 2014).

Economic efficiency the growth and exploitation of new type of sheep, compared to classical Asian sheep, as with local ancient race sheep Tusca has been calculated according to the method of academican Лоза Г.М. (1983). The essence of this method consists in determining of production difference obtained from sheep of different type, expressed in cash and additional expenses decreased by multiplying coefficient 0.75. Economic efficiency calculations were been performed using the following formula.

$$Ee = \frac{V \cdot S}{100} K$$

where:

Ee – economic effect calculated to one animal per year, in MD lei;

V – production value obtained from 1 sheep per year, expressed in measure units (meat, milk - in kg skins - in pieces);

S – increase obtained production, compared with the control group, expressed as a percentage (%);

K – constant coefficient of diminishing spore production, conditioning by additional costs to obtain this growth.

In determining the value of production has been applied currently trading prices of these products. There have been taken into account meat production, expressed in body weight of different groups of sheep, the milks production and the skins production. The economic efficiency of a new type of sheep has been determined in report to standard the classic Asian Karakul race, as and the local Tusca race.

RESULTS AND DISCUSSIONS

The research results have been demonstrated, that the selection directional progressive carried over generations after the main productive characters, such as body weight, milk production and skins quality, leading to the formation of a new type of sheep Karakul, which differs net of the type classic Asian Karakul through superiority body weight and

milk production, giving few after skin quality (share skin sort I). However, we must mention that after some skins qualities (standard usable surface of skin), these skins obtained from Moldavian Karakul lambs are superior to those of Asian Karakul. For example, in 2005 in the flock INZMV have been obtained skins with average surface by $1839 \pm 26 \text{ cm}^2$, as compared with $1361 \pm 32 \text{ cm}^2$ to the sheep skin type Asian Karakul Kazakhstan (Карынбаев А.К. и др., 2008), the firsts surpassing after this character with 478 cm^2 or 35.1% ($t_d=11.6$; $P<0.001$).

It was found, that the biggest relative difference production of new type of Moldavian Karakul sheep to the old classic - Asian Karakul there are at the body weight character and milk production (Tab. 1). Regarding the body weight, the most significant difference have 18 months rams (78.5%), reproduction rams (53.1%) and 6 months rams (42.5%). This is not casual and is explained by the fact that males at all stages of age were subjected to more exigent selection. From here, the differential and selection effect of rams is significantly larger, than females. The economic efficiency obtained from meat production (live weight) to these groups of animals is respectively 940.5; 239.2 and 357.0 lei / head / year.

More evident is the difference between females bodies weight. At the sheep, the females body weight of a new type is higher than the Asian type with 28.4%, at 18 months young ewes are - with 39.2% and at 6 months lambs - with 29.2%. The economic efficiency valued of this productivity is at sheep 91.5; at 18 months young ewes - 211.5 and at 6 months young ewes - 164.2 lei / head / year. On average in all groups of animals, obtained economic efficiency from the superiority of body weight is 334.0 lei / head/year. Significant economic efficiency in the exploitation of the new type of Moldavian Karakul sheep has been obtain, also, and at the milk production. Given that the milk production at the Moldavian Karakul sheep is with 53.2% higher, compared to the Asian Karakul sheep, economic effect from this morfo-productive character, highly important, constituted 199.5 lei / head / year.

Unlike the Asian Karakul sheep, the new type of sheep gives less (15%) those after their skin quality, so have a lower economic efficiency after this character.

Table 1. Economic efficiency of new type of Moldavian Karakul sheep, compared to classic Asian Karakul

Title of the production character, in profile on age groups of sheeps	Unit of measure	The productivity of sheep		The difference in production		Price of production, lei/unit	Economic efficiency, lei (col. 5 x col. 7 x 0.75)
		Standard race Asian Karakul	New type mean, 2003-2005	in nature	in %		
1	2	3	4	5	6	7	8
<i>Body weight:</i>							
Rams reprod.	kg	60	91.9	+31.9	53.1	10	239.2
Ewes	kg	43	55.2	+12.2	28.4	10	91.5
Rams 18 months	kg	42	75.0	+33.0	78.5	38	940.5
Ewes 18 months:	kg	36	50.1	+14.1	39.2	20	211.5
Rams 6 months	kg	28	39.9	+11.9	42.5	40	357.0
Ewes 6 months:	kg	25	32.3	+7.3	29.2	30	164.2
<i>Mean at 1 head</i>	<i>lei</i>	x	x	X	x	X	334.0
<i>Milk at 1 ewes</i>	<i>kg</i>	50	76.6	+26.6	53.2	10	199.5
<i>Skins sort I</i>	<i>buc</i>	0.8	0.68	-0.12	-15	140	-16.8
<i>Mean at 1 ewes</i>	<i>lei</i>	x	x	X	x	X	274.2

Furthermore, because the economic value of the skins production character is smaller compared to the production of meat and milk, a decreasing of overall economic efficiency of the new type of sheep is not essential.

It was found that, overall, after all productive characters, new type of Moldavian Karakul sheep, compared to type Asian Karakul has a fairly evident economic efficiency and constituted 274.2 lei in averaging at one sheep per year.

At the same time, new type of sheep Moldavian Karakul has economic superiority compared to aboriginal race Tusca (Tab. 2).

From the data presented is noted that Moldavian Karakul sheep have economic benefits to the local race Tusca after skins quality and body weight. Thus, the share of I sort skins at the new type of sheep is 68%, or 4.5 times higher than at the race Tusca (15%). Body weight of the new

type rams is higher with 31.3 kg or 53.2%, of ewes - 12.9 kg or 30.5%. The economic effect obtained from spore body weight of reproduction rams, compared to Tusca race constituted 239.3 lei / head / year and of ewes - 96.8 lei / head / year. From skins quality spore the economic effect constituted 55.7 lei / head / year.

However, we cannot mention, that mass crossing of Tusca sheep with Asian Karakul rams, which took place in the period after World War II, without taking into account the production of milk and meat, have led to loss some important qualities of this race, as milk production. Thus, the new type of Moldavian Karakul ewes gives up after milk production those from Tusca race with 31.4 kg or 29.1%. The economic effect from valorization of this character diminishes at the new type, compared to Tusca race with -235.5 lei/head/year.

Table 2. The economic efficiency of the new type of Moldavian Karakul sheep compared to local race Tusca

Specification	Unit of measure	The sheeps productivity		Difference		The price of unit of production, lei	The economic efficiency (col.5x7x 0.75), lei
		Tusca (after Ильев Ф., 1969)	Karakul Moldavian	in nature	in %		
1	2	3	4	5	6	7	8
<i>Body weight:</i>							
Rams	kg	60.0	91.9	31.3	53.2	10	239.3
Ewes	kg	42.3	55.2	12.9	30.5	10	96.8
<i>Mean at 1 head</i>	<i>lei</i>	x	x	X	x	X	168.1
<i>Milk at 1 ewes</i>	<i>kg</i>	108	76.6	-31.4	-29.1	10	-235.5
<i>Skins I sort</i>	<i>buc</i>	0.15	0.68	0.53	453.3	140	55.7
<i>Total at the 1 sheep</i>	<i>lei</i>	x	x	X	x	X	156.3

Overall, thanks to the superiority after body weight and skins qualities, the economic effect of the new type of sheep, compared to race Tusca constitutes 156.3 lei/head/year. We should be mentioned, that the work of selection and genetic improvement of Moldavian Karakul sheep populations, especially, in the direction of increasing of milk production, continued to the present.

For the special qualities of production, the new type of Karakul sheep are everywhere required in the northern and central regions of the Republic of Moldova and beyond its borders, being exported to neighboring countries, Romania and Ukraine.

Thus, during the creation of this type from creative households were traded over 1.5 thousand heads of breeding animals. Breeding rams have been supplied almost in all districts of the Northern and Central areas of the Republic, both in the individual and in different households associated.

During 1993-1994 years has been provided 314 head of sheep Moldavian Karakul in Romania (Research Station for sheep farming "Rușețu" Buzau).

In 2006 year have been supplied 890 head of Moldavian Karakul sheep in Frumușica village, Tarutino district, Odessa region, Ukraine, where has been founded a breeding farm quite important with a total of over 5000 heads.

At the international exhibition "Infoinvest", which took place at "Moldexpo", Chisinau city, in 2001, the new type of Moldavian Karakul sheep has been highly appreciated by the visitors and the Committee of Experts of the exhibition, for which realization of selection in animal livestock "New type of Moldavian Karakul sheep" and authors-creators of this type have been awarded with Diploma of the III degree.

CONCLUSIONS

1. New type of Moldavian Karakul sheep has advantages compared to the classical type of Asian Karakul, at the body weight, the milk production and the skins surface, giving up less at skins sort I. The body mass of a new type of sheep is higher, compared with type of Asian Karakul sheep: at the reproductive rams - with 53.1%, at the 18 months rams - with 78.5%, of

the 6 months rams - with 42.5%, of the ewes - with 28.4%, at the 18 months young ewes - 39.2% of the 6 months young ewes - with 29.2%.

2. The economic efficiency, obtained from meat production (live weight) at these groups of animals is, respectively, 940.5; 239.2; 357.0; 91.5; 211.5 and 164.2 lei/head/year.

3. The milk production of Moldavian Karakul sheep is 53.2% higher, compared to the Asian Karakul sheep. The economic effect from spore of this morpho-productive character, highly important constituted 199.5 lei/head/year.

4. The new type of sheep gives less (15%) of Asian type after skins quality (skins share of sort I), so, have a lower economic efficiency after this character -16.8 lei/head/year.

5. Overall, after all morpho-productive characters, new type of Moldavian Karakul sheep, compared to with Asian Karakul type, it has an economic efficiency equal to 274.2 lei on average at one sheep per year.

6. The Moldavian Karakul sheep possess economic advantages and as to initial race Tusca after skin quality and body weight. The skins share of sort I at the new type of sheep is 68%, which is 4.5 times higher than in race Tusca (15%). The body weight of the new type of rams is higher with 31.3 kg or 53.2%, of ewes – with 12.9 kg or 30.5%.

7. The ewes of new type Moldavian Karakul gives up after milk production those from Tusca race with 31.4 kg or 29.1%, reducing the economic effect from capitalization of this production with -235.5 lei / head / year.

8. In total, the economic effect of the new type of sheep, compared to race Tusca, constituted 156.3 lei/head/year.

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