TECHNO-ECONOMIC ASPECTS OF DEVELOPMENT FOR LOCAL GOAT BREED FARMS

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The objective of this study was to identify development tendencies of farms that rear local goat breeds, and the level of application of intensive management elements, in order to design proper preservation policies. The study was based on the data collected in 52 farms that keep goats of five local breeds in Albania. Statistical data processing (SPSS) has shown that the main reason for keeping local goats is the adaptation to biophysical conditions (84.6% of farmers), resistance to pathologies (34.6%), quality of product for human use (34.5%), high productivity (15.4%). About 36.5% of farmers plan to increase number of animals. This tendency is more evident at bigger farms. These farms are more the market oriented, and show a higher management level, as use of concentrate before and after kidding, use of hay during the winter, higher replacement rate etc. They have higher kidding percentage, compared with other farms. Practices to avoid inbreeding are more common at bigger farms but the problem still exists. Reduction of number of purebred local goats and number of farms increase the threat to local breeds. Differences evidenced in the study show that bigger farms are better structures for preservation of local goat breeds. Development policies, especially those in protection of local breeds need to focus mainly in bigger farms that may become model farms or ARC farms in mountain and hilly areas.

Key words: local goat breeds; farms, management; development policies; preservation; model farm; ARC farm

ТЕХНОЛОШКО-ЕКОНОМСКИ АСПЕКТИ ВО РАЗВОЈОТ НА ЛОКАЛНИТЕ ФАРМИ ЗА ОДГЛЕДУВАЊЕ КОЗИ

Целта на ова истражување беше да се идентификуваат развојните тенденции на фармите кои одгледуваат различни раси кози и нивото на примена на интензивни управувачки елементи, со цел да се основат соодветни политики на одгледување. Истражувањето се базираше врз податоци собрани од 52 фарми кои чуваат кози од 5 локални раси во Албанија. Обработката на статистичките податоци покажа дека главните причини за чување на локалните раси кози се адаптацијата на биофизичките услови (84,6% од фармерите), отпорноста на болести (34,6%), квалитетот на производите за исхрана на луѓето (34,5%), високата продуктивност (15,4%). Околу 36,5% од фармерите планираат да го зголемат бројот на животни. Оваа тенденција најдобро се забележува кај големите фарми. Овие фарми се повеќе ориентирани кон пазарот и покажуваат повисоко ниво на организација, употреба на концентрати во исхраната на животните пред и по ојарување, употреба на сено зиме, повисок процент на замена на грлата итн. Тие имаат повисок процент нови јариња во споредба со другите фарми. Практиката на одбегнување на вкрстувањето е почеста на поголемите фарми, но проблемот сѐ уште постои. Намалувањето на бројот на чистокрвни локални кози и на бројот на фарми ја зголемува заканата за локалните раси. Разликите наведени во истражувањето покажуваат дека поголемите фарми се подобри места за зачувување на локалните раси кози. Политиките за развој, посебно оние за заштита на локалните раси, треба да се фокусираат главно на поголемите фарми, кои можат да станат фарми-модели или ARC фарми во планинските области.

Клучни зборови: локални раси кози; фарми; менаџмент; политики за развој; одржување; фарма-модел; ARC фарма

1. INTRODUCTION

Trends in population demographics, e.g. urbanization, as well as technological changes in farming systems and marketing can have negative effects upon animal genetic resources. Commercial production systems tend towards uniformity, whilst livelihood-oriented systems thrive on diversity. This indicates the fundamental nature of the forces driving diversity decline. Human societies are driven by the desire to advance and develop, and economic development the way we have known it has been driven by short term economic efficiency through substitution of the less productive assets for more productive ones, that is substitution of local breeds for cosmopolite ones.

Very fast changes in the structure of animal production in Albania during the last 18 years, has brought as a result a quick reduction of population of local breeds, including goats breed population. Abandonment of rural areas especially remote ones by farmers moving to more developed and prosperous areas has been another factor that brings the reduction of local goat population.

The lack of knowledge of the economic value of AnGR could be considered as another significant factor contributing to genetic erosion. Preservation of AnGR is becoming an imperative requirement for government and other specialized institutions. Implementation of different policies to support preservation and development of local breeds needs detailed studies on problems, development tendencies, and factors effecting farming of local goat breeds.

This study is made in the framework of the project "Socio economic study of autochthonous breeds of small ruminants" supported by Ministry of Agriculture and Food.

2. MATERIAL AND METHODS

The study is based on a socio-economic survey. Complete data on 54 farms in six areas correspondent to populations of local goat breeds in Albania were collected (districts of Has, Mat, Pogradec (Mokër), Korcë (Liqenas), Vlorë, and Gjirokastër.

Socio-economic data have been collected through three questionnaires addressed to:

– farmer, containing sections on the identification of interviewer, his/her family and farm; on general information about the farm; on sheep and goat breeds present in the farm and on the breeding system.

– Region, containing socio-economic information on sampling regions. The questionnaire was substituted by direct retrieval of data from public sources.

– Breeds, describing the characteristics of the breeds analyzed in the project. Data on 6 goat and 3 sheep breeds autochthonous.

– Information on farms where the breeds are raised has also been collected.

All the information was registered in a database, and thorough processing and analysis are made. Data processing is completed using SPSS.

3. RESULTS AND DISCUSSION

Analysis of the answers that farmers have given about the reasons of keeping local goat breeds has brought to following answers: The main reason for keeping local goats is the adaptation to biophysical conditions. This option was chosen by 84.6% of interviewed farmers, resistance to pathologies was the second most important factor according to farmers with 34.6%, and then quality of product for human use (34.5%), high productivity (15.4%). Goats in Albania are reared mainly in remote and mountain areas, with very difficult conditions and very limited resources. Most of them are reared in very extensive way, and have been adapted to the climate and biophysical conditions.

Farms in these areas are very small and they rear small flock of goats. They have served for a long time mainly for self consumption. The small piece of land they own serves for producing vegetables, crops and forages that is very little for supporting a more intensive production.

Replacement of billy-goats is made by males coming from the farm itself in 33 of 54 cases, through purchase from other farms in 10 of 54 cases, and through exchange in 11 of 54 cases. Farmers are aware of inbreeding problems in 35 of 54 cases.

In the study, three clear tendencies of development of farms were identified.

• Farms with development tendency, which are farms aiming to increase the number of animals and the activity.

• Farms with unclear objectives, that think to keep the activities at the same level.

• Farms that aim to reduce or completely quit the activity.

Table 1

Average data from farms under research

Trait	Average value
Age of farmer	56.8±10.1
Education (years)	8.1±3.8
Land surface (hectare)	1.47±2.04
Surface planted with forages (%)	31.41±36.96
Average number of goats	35.4 (varying from 7 to 120)
Goat farms keeping also sheep	40.7%
Goat farms keeping also cows	74.1%
Income from goats	47.81±32.47
Income from other livestock	39.92±32.55
Farms considering milk production as main priority	37%
Farms considering meat production as main priority (%)	59.3 %
Farms considering production of young stock as main priority (%)	3.7%
Age at the first lambing (kidding)	24 months (only 4 of 54 farms apply mating at the first year)
Age at last kidding (years)	7.43+0.93
Fertility (prolificacy %)	114.63+17.69
Losses of kids during 1st month of life (%)	4.59+6.24

We have identified that the goal of the farms is related with other parameters of the farm as, the size of the farm, economic efficiency, application of better management practices etc. Taking in account that the process of depopulation of the mountain areas and the slight increase of remaining farms is a general tendency, we have grouped the farms in two types: the farms that tend to grow and the type of farms that tend to reduce or keep the same size. The two types of farms show differences in their profile. The main reasons for deciding their goal is "efficiency" of local goats and preferences of the "market" for these products. Anyway, the perception of efficiency of the breed was very different from the farms according to their goal

Table 2

Reasons declared by farmers for decisons of their goal (more then one reason is accepted)

Reasons for	No.farms	Rentability	Market	Personal
Growing farms	21	90.5 %	9.5 %	9.5 %
		19 of 21	2 of 21	2 of 21
Stable or closing farms	33	12.1 %	0.212	0.485
		4 of 33	7 of 33	16 of 33

There were significant differences between different types of farms regarding some technical parameters.

Table 3

Main productive traits for farms according to their goal

	Nr Goats	Average milk production (kg)	Proli-ficacy (%)	Lost kids (%)e
Growing farms	44.76	204.76	125.0	3.76
STD	29.23	52.25	18.52	4.94
Stable or closing farms	29.21	164.76	108.03	5.12
STD	24.35	24.96	13.34	6.91
	t=2.09*	t=3.21**	t=3.57**	NS

The number of goats has a significant difference between two types of farms. Growing farms have an average of 44.76±29.23 goats compared with an average of 29.21±24.35 at farms that tend to reduce or close their activity. Significant differences on milk production are shown between two types of farms. Growing farms have much higher production than other farms. Kidding percentage is found higher at growing farms compared with other farms. It is a tendency that losses in young animals is lower in growing farms, but the differences in this study are not significant.

Income from goat products according to the type of farms is shown in the Table 4.

The fact that income from growing farms is much higher than in other farms, clearly shows a stronger market oriented process. Higher income from the market does mean more financial resources for purchasing inputs, more posibilities to intensify production. Intensification of production is shown in the level of use of concentrate food at goats during sensitive phases. A correlation of $r = 0.235$, between "% of income from goats" and

the "use of concentrate fodder for goats" at technically recomended phases as for pregnant goats, early lactation or for young kids, was found.

T a b l e 4

The % of income from goat products according to two types of farms

	Income from milk (%)	Income from meat (%)	Total income from goat (%)	% of milk production sold to the market	% of meat production sold to the market
Growing farms	12.98	48.31	61.29	30.95	63.05
STD	16.48	26.17	29.79	36.89	26.41
Stable or closing farms	7.33	31.89	39.23	18.64	38.64
STD	12.80	27.14	31.12	31.36	32.12
	NS	t=2.18*	T=2.56*	T=1.3 NS	T=3.55**

Differences are found in management of breeding problems in two types of farms. Growing farms produce 52.4 % of billy-goats from their farms compared with 66.7% of stable or reducing farms. Even growing farms have higher number of animals; they give more attention to inbreeding problems. Stable or reducing farms apply more exchange of billy-goats with their neighbors. In this way they get 30.3% of required billy-goats compared with only 4.8 % at growing farms. On the other hand, growing farms get a higher percentage of billy-goats for the market (42.9% against 3%).
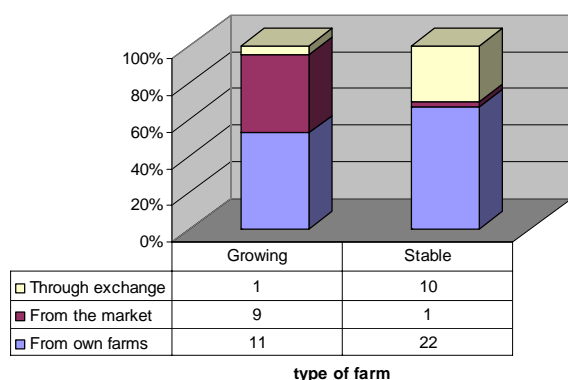

	Growing	Stable
□ Through exchange	1	10
■ From the market	9	1
■ From own farms	11	22

type of farm

Fig. 1. Sources for replacing of billy-goats in two types of farms

Positive correlations are found between number of goats and farms income from goat products. This supports the hypothesis that bigger farms are more market oriented.

T a b l e 5

Correlations between numbers of goats per farm

Correlating parameters	Value of correlation
% of income from goats : Use of concentrates	0.235
Nr. Goats : Income from goats	0.530
Nr. Goats : % of sold milk	0.343
Nr. Goats : % of sold meat	0.641

The fact that growing farms have higher number of goats, and that the number of goats has significant correlation with the share of income from goat products make us suppose that number of animals is an important element in farm's performance.

The farms at the beginning of private activity after the communist regime, worked mainly for self consumption and step by step they have grown up, becoming more and more market oriented. Anyway, most of them still don't have a clear financial balance. In such a situation it is very difficult to define what is optimum size for an efficient farm that a family can run. As far as this is beyond the purpose of our study, we have considered a flock of 50 heads as a minimum of an economic unit, taking in account most of working processes and their costs. On this base we have grouped farms in "smaller than 50 heads" and the "bigger than 50". Even though, this classification is made only to show tendencies and effects of the farm size.

T a b l e 6

The average number of goats, age and education level of farmer according to farm/flock size

Size of farms	No. farms	Average nr. of goats	Age of farmer	Level of education
More than 50 heads	18	69.39	56.39	7.61
		20.89	10.22	3.68
Less than 50 heads	36	18.44	57.00	8.31
		10.90	10.21	3.93
		t=9.7***	NS	N.S.

Apart differences in number of goats, that is reasonable for the criteria we have used, we do not find significant differences at the age of farmer or level of education between two sizes of farms.

T a b l e   7

Share of income from goats' products and share of products for market

Size of farms	No. farms	% of income from goat milk	% of income from goat meat	Total income from goats	% goat milk sold	% of goat meat sold
More than 50 heads	18	22.06	51.58	73.64	48.61	73.94
		17.76	*23.80*	*26.54*	*39.40*	*21.09*
Less than 50 heads	36	3.26	31.63	34.89	10.83	36.61
		7.10	*27.77*	*22.98*	*22.98*	*28.62*
		T=4.32***	*t=2.74**	*t=5.01****	*t=3.76****	*t=5.42*

The results shown in Table 7 clearly demonstrate that incomes from goats are much higher in bigger farms, compared with smaller ones. This is not only because the share of products for self consumption is smaller in case of higher production, but also because it is easier and more efficient to find or reach the market when the amount of product is higher. Bigger farms are more market oriented, and bring to farmers more financial resources, that may be used to increase the living level but also to improve technology and increase their business.

T a b l e   8

Main productive traits for farms according to their size

Size of farms	Average nr. of goats	Average milk production (kg)	Prolificacy (%)	Kids losses (%)
More than 50 heads	69.39	201.39	118.06	4.06
STD	*20.89*	*54.82*	*14.16*	*4.37*
Less than 50 heads	18.44	169.78	112.92	4.86
STD	*10.90*	*31.49*	*19.17*	*7.03*
	t=9.7***	*t=2.27**	*N.S.*	*N.S.*

Results show that farms with more than 50 heads keep also sheep in only 21% of case instead of 40% of cases at farms with less than 50 heads. This is an evidence that supports the idea that bigger farms are more specialized than smaller ones. There are no differences in frequency of farms that keep also cows. The main reason for keeping cows at all goat farms is production of milk for self consumption as far as goats lactation is about seven months and cannot supply the family with milk all over the year. There is no evidence that these farms have sold cows milk in the market.

In Figure 2 the frequency of using additional concentrate food according to the size of the farm is shown. Bigger farms have a higher tendency to use concentrate during late pregnancy, early lactation or for suckling kids.
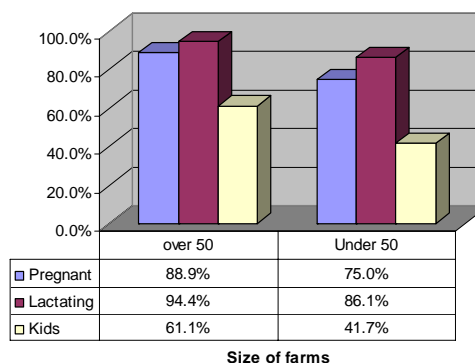

	over 50	Under 50
Pregnant	88.9%	75.0%
Lactating	94.4%	86.1%
Kids	61.1%	41.7%

Size of farms

Fig. 2. Use of concentrates in sensitive moments of production cycle

4. CONCLUSIONS

Farms that rear goats of local breeds undergo to the process of concentration and specialisation. This process is strongly linked with intensification of production. A part of farmers have clear ideas and aim to increase number of animals and develop their business. The other part, are undecided or aim to reduce and abandon their activity.

Farms that tend to grow, show at the same time more intensive elements, as use of concentrates, control of inbreeding etc, and have better results as higher milk production, higher prolixficacy, etc. They are more market oriented, and their income from goats is much higher than other farms. Farms that apply more elements of intensification of production are at the same time the biggest farms. They tend to increase number of ani-

mals. Farms that rear small flock hardly may find themselves as prospective farms. In general they have tendency to quit this activity as soon as they find another opportunity.

Bigger farms are more market oriented. They are selling more goat products and buying more imputes. All elements analyzed, as those of animal feeding in sensitive moments, management of inbreeding problems, clearly shows that bigger farms are a good supporting structure for presservation of local breeds. Support of these farms through providing incentives to intensify the use and development of local breeds could well be a sustainable strategy. Such farms may become even ARC farms

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