

Chetroiu, Rodica; Iurchevici, Lidia

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ECONOMIC EFFICIENCY IN MILK PRODUCTION

Rodica CHETROIU, Lidia IURCHEVICI

Research Institute for Agriculture Economy and Rural Development

Corresponding author e-mail: rodica.chetroiu@iceadr.ro

Abstract: *The paper analyzes comparatively the level of economic efficiency in the production of cow, sheep and goat milk, for the year 2023. The methodology used is economic analysis, based on the calculation of technical-economic indicators and economic efficiency indicators. The results indicate that, for cow's milk, depending on the level of production and other factors, profitability can have negative or positive values, varying between minus 5.4 and 7.5%. In sheep's milk, without capitalizing secondary production (mainly lambs) and without subsidies, farmers would suffer financial losses. Goat's milk seems to have the least economic vulnerability, as the activity ends with an estimated average profit of 8.1%. The activity of milk production remains of strategic economic importance, but located in a challenging context of destabilizing factors, which leave their mark year after year and which discourage farmers from continuing their activity.*

Key words: milk, economic efficiency, cows, sheep, goats

JEL Classification: Q11, Q12, Q13

INTRODUCTION

Agriculture in the European context must become a competitive sector of activity (Chiran A., Gîndu Elena, Banu A., 2002), with compliance with the rules regarding environmental protection, as well as with the implementation of support measures for the rural area, for the plant and animal production sectors. The application of the Common Agricultural Policy implies the integrated development of the rural economy and the protection of the environment, under the conditions of the new challenges related to the environment and climate.

Various researches have highlighted the discrepancies between the potential of agriculture and its contribution to sustainable development and reducing the degree of poverty. Our country has structural characteristics similar to those of other member states, but presents a significant gap between the category of large farms and that of small farms, with subsistence and semi-subsistence agriculture still prevailing. Under these conditions, profitability indicators are low, even negative, for many of the activities, including animal husbandry (Constantin M., 2007). In small farms, new technologies penetrate with difficulty, receptivity is still low.

Determining and assessing the economic efficiency in milk production requires the development and use of a system of indicators, which will quantify and express as correctly as possible both the efforts made to obtain production and the effects obtained as a result of these efforts.

The conducted research aimed to elaborate and analyze the economic efficiency of the milk of the three species (cow, sheep and goat) comparatively, on two levels of production, based on the different technical-economic indicators, for the year 2023.

MATERIAL AND METHODS

In determining the production costs, it starts from the size and structure of the direct allocations of material and human resources necessary for the good performance of the production processes (Toma Elena, 2008).

To achieve economic efficiency (a reasonable and encouraging profit) it would be necessary to ensure an adequate fodder base, a performing genetic material, and a management with great responsibility.

Feeding is the biggest challenge nowadays, not only here, but worldwide. The calculation of technical-economic indicators was carried out based on the relationships known in specialized economic literature, the examples presented being considered medium level, the milk productions considered being 3,500 liters and 6,000 liters per cow, 60 liters per sheep and 270 liters per goat.

RESULTS AND DISCUSSIONS

Cow's milk

Following Figure 1, the largest share in total expenses, in both variants (3,500 l/head and 6,000 l/head), is held by variable expenses, approximately 76-80%.

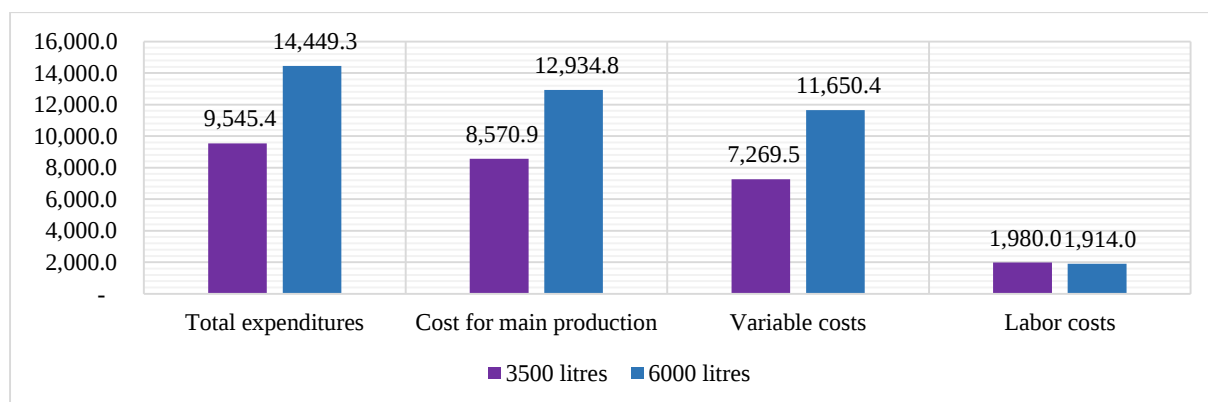
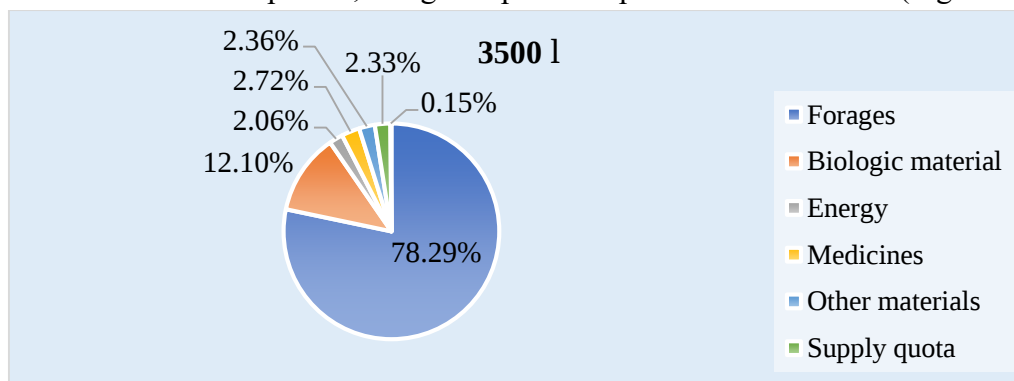


Figure 1 – Different categories of expenditures for cow's milk, on levels of production

Source: Own calculations

Within variable expenses, forages expenses represent 78.3 – 79.2% (Figure 2).



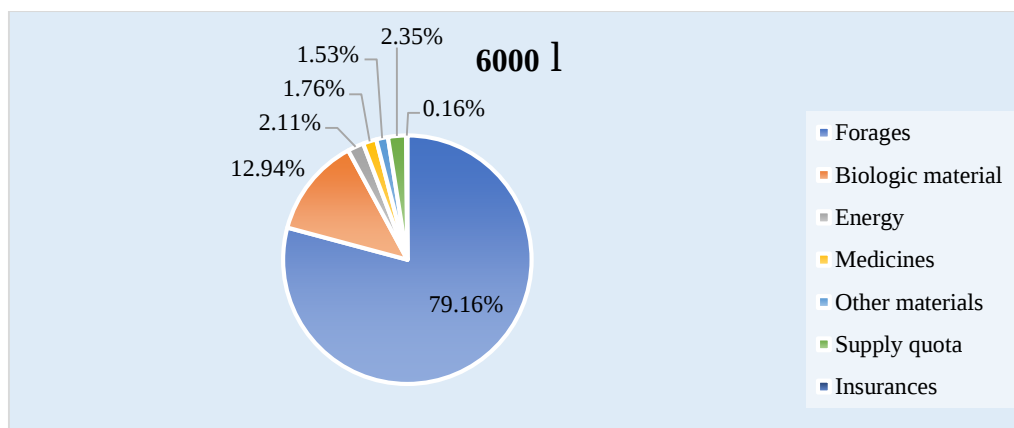


Figure 2 – The structure of variable expenses for cow's milk

Source: Own calculations

Another element in the structure of variable expenses is the value of the biological material, which participates with 12.1-12.9%, and labor costs represent 13-20% of the value of total expenses.

Regarding the production level, it can be easily seen that with a production of 6,000 l/head, the total expenses are higher, compared to a production of 3,500 l/head, but lower by approximately 40% per liter, concluding that high yields require lower effort allocations per liter of milk. Economic calculations highlight the cost of the product and the profit or loss that a farmer can make in running a production cycle.

After recovering from the total expenses, the expenses for the value of the secondary production (the value of the calf + the manure and the value of the reform), the production cost resulted, a cost that differs from one production to another, from one maintenance system to another. Thus, at a production of 3,500 l/head, the cost of one liter of milk was 2.45 lei, and for 6,000 l/head, the cost was 2.16 lei/l (Figure 3).

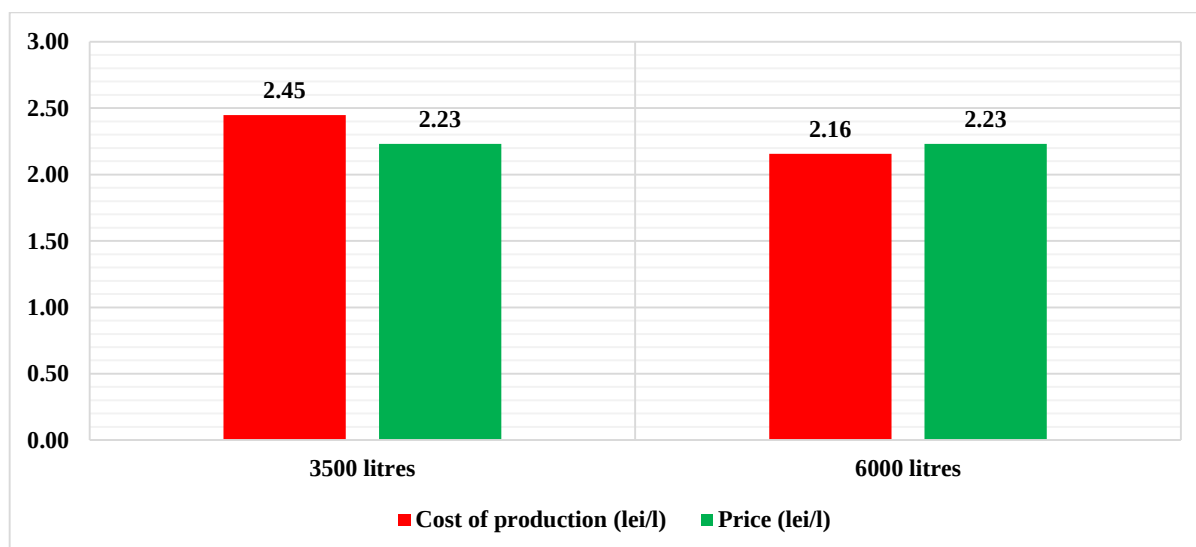


Figure 3 – Cost and price for cow's milk

Source: Own calculations

According to the data from NIS, related to the purchase price at the farm gate, in 2023, it did not exceed 2.30 lei/l, but a price that would allow farmers to continue their business, to be able to support and develop successfully would be 3 lei/l.

It is obvious that, with a production of only 3,500 l/head and a price of 2.23 lei/l, the rate of taxable profit was -8.9%, and with the production of 6,000 l/head, the rate recorded a value slightly positive, of 3.4% (Figure 4).

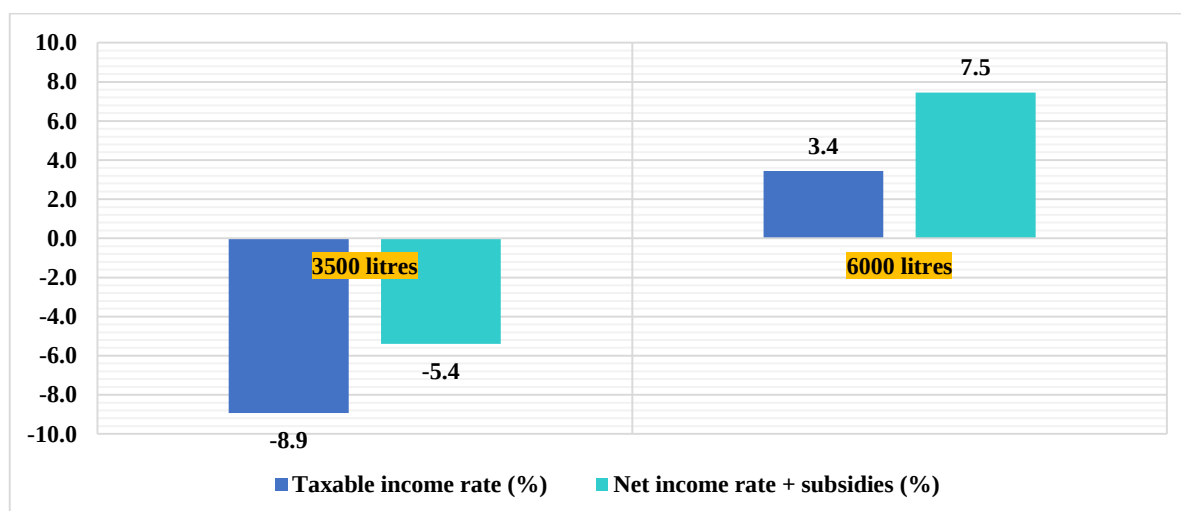


Figure 4 – The income rates for cow's milk

Source: Own calculations

There is a profitability threshold, which also depends on the number of cows milked, not only on production. The bigger the farms, the more profitable they are.

Sheep's milk

Sheep's milk represents an important source of income for breeders, milk that is processed in specialized units or in the farm, especially for obtaining cheeses, through which a very good yield and added value are achieved (Dinescu S., 2003). The results listed in Figure 5 represent the main technical-economic indicators for sheep milk with an average production of 60 l/head/year. Of the total expenses, variable expenses represent over 80%, the rest belonging to fixed expenses.

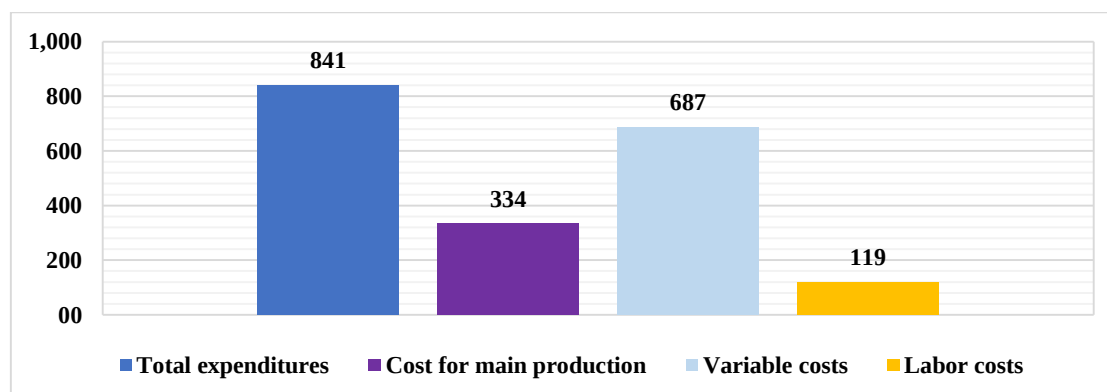


Figure 5 – Different categories of expenditures for sheep's milk

Source: Own calculations

Within variable expenses, the largest share is of feed, 83%, followed by biological material 9.7%, and the rest is held by other expenses (medicines, energy, other material expenses etc.) (Figure 6).

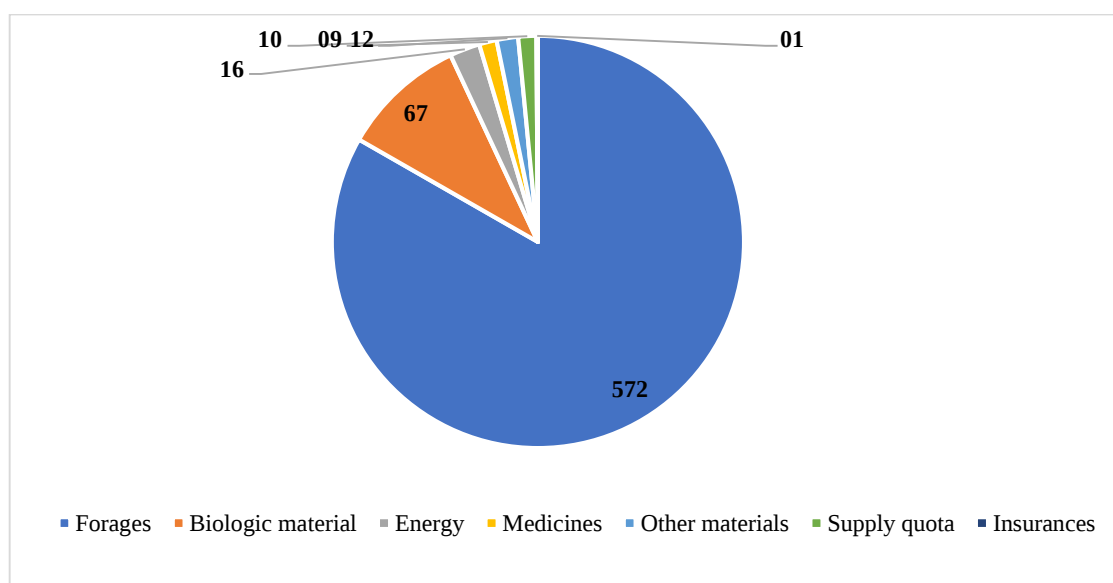


Figure 6 – The structure of variable expenses for sheep's milk

Source: Own calculations

Labor costs represent over 75% of fixed costs and over 14% of total costs. If 14.02 lei are spent for one liter of milk, 8.45 lei/l can be recovered after the sale of the secondary production. The value of secondary production, which is brought by the value of lambs, and the reformations, does not always compensate total expenses, so that many breeders record losses. In our case, with a production of 60 l/head, the cost per l of milk was 5.57 lei/l, and the sale price at the farm gate 5.50 lei/l. So, under these conditions, the rate of taxable income recorded a negative value of -1.3 lei/l, to which, adding the subsidy per head of sheep, a rate of net income plus subsidy of 5.4% was obtained (Figure 7).

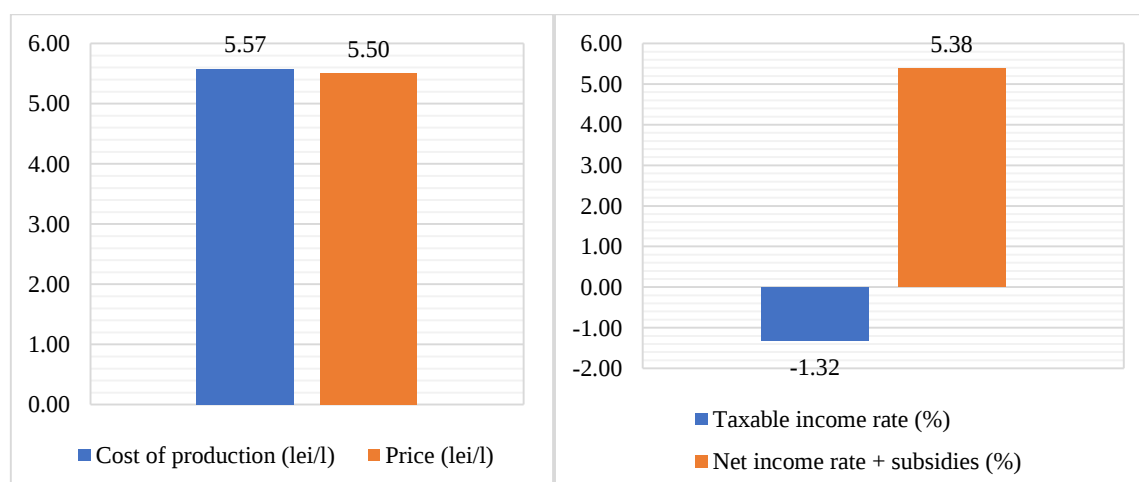


Figure 7 – Cost, price and income rates for sheep's milk

Source: Own calculations

Goat's milk

Although it cannot talk about significant differences between the three types of milk (cow, sheep, goat), they do exist. First, goat's milk is known for its slightly higher protein content compared to cow's and sheep's milk and is more easily digestible. The efficiency and productivity of goat milk is influenced by the competition of other agricultural products, as well as the decrease in fodder production due to drought. All this affects the cost of production.

Thus, in Figure 8, it can be seen that 5.82 lei are spent to obtain a liter of milk, from which the value of the secondary production (the lambs plus the reform) is gained, and it can talk about the actual cost of 4.21 lei. Within it, 81% are held by variable expenses, and the difference of 29% belongs to fixed expenses. Feed expenses have the largest share of over 85% of the value of variable expenses, followed by 7.2% of biological material expenses.

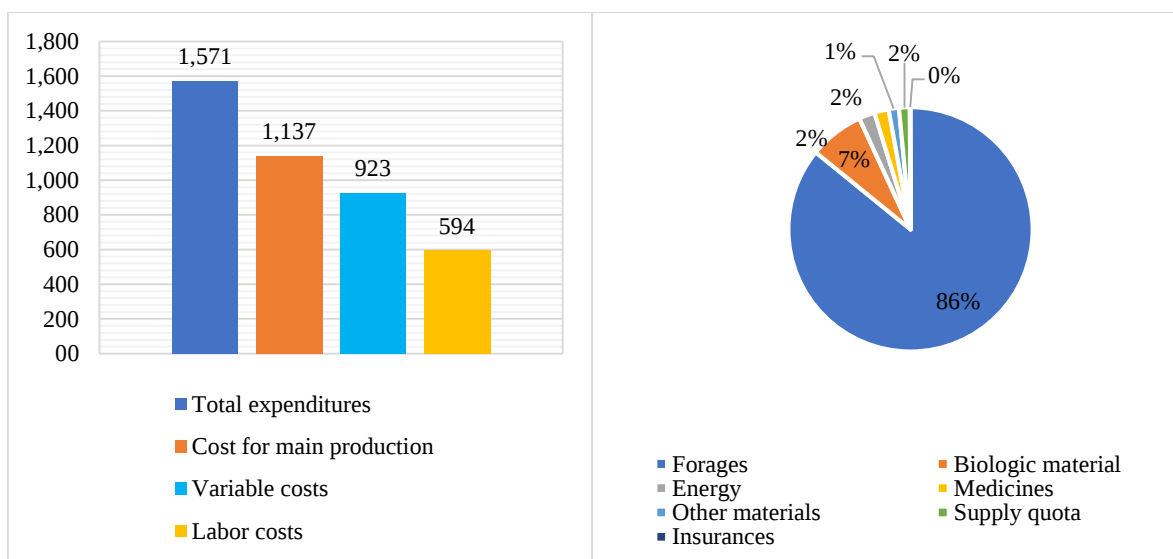


Figure 8 – Different categories of expenditures for goat's milk

Source: Own calculations

The price of a liter of goat's milk was 4.5 lei, in 2023 (according to NIS data), from which, subtracting the expenses for the main product, a taxable income of 0.29 lei/l, and 0.34 lei results /l value of net income plus subsidy (Figure 9).

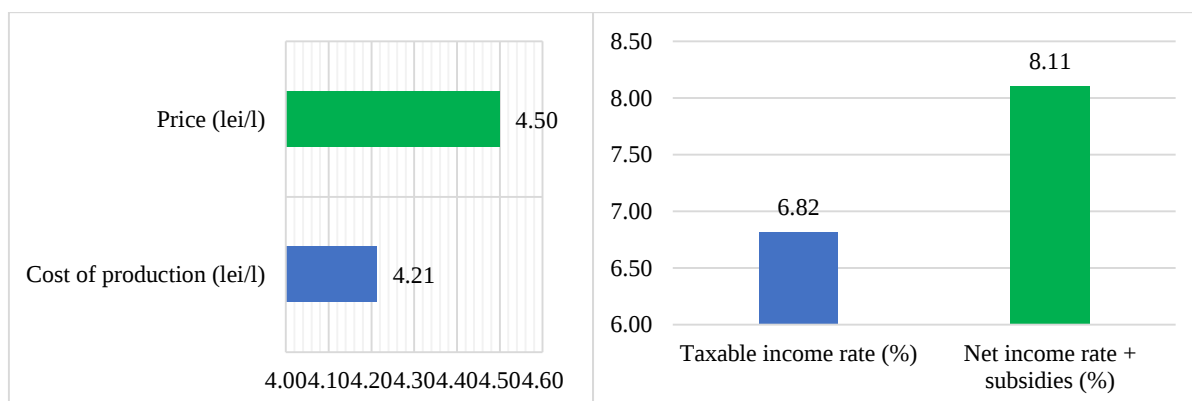


Figure 9 – Cost, price and income rates for goat's milk

Source: Own calculations

CONCLUSIONS

Analysis of the dairy farming sector is subject to high volatility in input prices which repeatedly affects the farm income. In recent years, this volatility refers mainly to the expenditure on feed, biological material, energy, and fuel. Feed expenses represent the largest share in the cost of milk, so that their share of total expenses is 60-64% for cow's milk, over 67% for sheep's milk and over 50% for goat's milk.

The price of a liter of milk in most cases does not cover the cost of production on the farms. The high prices of recent years, and especially climate change, directly affect livestock farmers. By following the structure of total milk production expenses, the basic problem of milk production is the low level of production per head of animal. If increased productions are obtained, then production costs per liter of milk also decrease.

Profitability is a basic component of economic efficiency and expresses the ability of economic units to obtain profit. Profit refers only to the amount of products sold outside the farm. Production profitability is expressed, as a rule, with the help of two indicators: profit and profit rate. To make the production activity more efficient in the farms of cows, sheep and goats raised for milk, the following should be considered:

- permanent correlation of purchase prices with real production costs;
- the use of rations and recipes balanced in terms of energy, protein, and minerals, adapted also to the conditions of climate change, in the feeding of dairy animals;
- the use of farm management and marketing strategies, for a more efficient correlation of production with market requirements;
- character improvement regarding the aptitude for mechanical milking in sheep and goats.

REFERENCES

1. Chiran A., Gîndu Elena, Banu A., (2002) – *Economia creșterii animalelor – teorie și practică*, Iași.
2. Constantin M., (2007) – *Marketingul producției agroalimentare*, Ediția a VI-a, AgroTehnica Publishing, Bucharest.
3. Dinescu S., (2003) – *Creșterea ovinelor pe coordonatele secolului XXI*, Ceres Publishing, Bucharest.
4. I.C.E.A.D.R., (2024) – ADER 22.1.2. Proiect - *Modele tehnico-economice de reducere a vulnerabilității veniturilor exploatațiilor zootehnice față de schimbările climatice, Phase 3 - Modele tehnico-economice de gestionare agricolă durabilă a culturilor furajere și a pajiștilor în fermele de ovine și caprine, în condițiile schimbărilor climatice*.
5. National Institute of Statistics NIS – Tempo online.
6. Toma Elena, 2008 – *Metodologie de estimare și evaluare a activităților de producție*, Cartea Universitară Publishing, Bucharest.