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CHARACTERISTICS OF DAIRY COW FARMS WITH NEGATIVE ECONOMIC RESULTS

RUXANDRA – EUGENIA POP¹

Abstract

Following the research carried out within the ADER 2412 project, entitled Research on the economic efficiency of raising sheep, goats, dairy and beef cattle and buffaloes, quantitative data were collected, analyzing the activity of livestock farms located in different counties in Romania, regarding different characteristics: farm size, level of milk production obtained, yields recorded at the farm level, degree of productivity, level of expenditure and income, break-even point. Based on the centralized data, a series of economic and financial indicators were calculated to determine the feasibility of the livestock farm, depending on the county in which it operates, such as: income rate (with or without access to subsidies), profit rate, exploitation risk rate, security index. In this paper, the emphasis is on the prototype of farms where negative economic results are recorded, in the sense that the factors that determined their identification are identified, thus outlining a series of recommendations to achieve and increase economic effectiveness and efficiency. at farm level.

Keywords: dairy cows, exploitation system, economic indicators, financial indicators, efficiency, effectiveness

JEL Classification: Q10, Q12

INTRODUCTION

ADER 2412 project, entitled *Research on the economic efficiency of raising sheep, goats, dairy and beef cattle and buffaloes*, aims at economic development on farms, respecting the principles of food security of the population, by increasing the supply of food products, in this case cow's milk. This can be achieved by substantiating support plans from public funds by the competent institutions. In order for the competent institutions to do this, information with a high degree of accuracy is needed, directly from the target audience, in this case, agricultural producers, owners of dairy farms. It is necessary for this information to provide an overview of the main reasons why the livestock farm is vulnerable, as well as the economic difficulties that have arisen at its level. In order to generate this set of information, the ADER 2412 project centralized data on economic indicators that reflect efficiency, recorded at the level of agricultural holdings. Based on them, a comparative analysis was performed between the case studies within the project, depending on different micro-environmental factors of the farm, such as: size, degree of mechanization and automation, location and use of labor. Also, different financial-economic indicators were calculated to demonstrate the feasibility of farms in the case study: labor productivity, in value and physical expression, profit or loss per unit of product, taxable income rate and income rate net, the rate of income obtained from the granting of subsidies, the break-even point, expressed in physical and value terms, the rate of exploitation risk (%) and the security index (Is).

The farms where data were centralized are placed in the territory so that the results are suggestive at national level (Ialomița, Vâlcea, Teleorman, Prahova, Gorj, Botoșani, Maramureș, Alba, Sălaj and Galați), taking under analysis all landforms, mountain, hill and plain areas.

MATERIALS AND METHODS

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To carry out this paper, the following materials and working methods were used:

- **Collection of data from different dairy farms**, with negative economic results, on farm characteristics (size, geographical area, average production, total production, total production value and average production value, total, fixed and average expenditure level, unit cost and capitalization price, labor productivity in value and physical expression);
- Based on the collected information mentioned above, **specific mathematical formulas** were used to calculate the following economic and financial indicators (table 1), in order to evaluate the performance recorded at the farm level:

Table 1. Delimitation of the financial indicators used in the present research

Nr. crt.	Indicator type	Definition / meaning	Formula	Source
1	Profit / unit of product	Surplus of revenues made over the costs of production and distribution of goods obtained	$Pr = (\text{business figure} - \text{total costs}) / \text{size of production}$	Gavrilă I., Ghiță P., Nițescu D., Popescu C., Manual Economie, Ed Economică, 2000.
2	Income rate	It expresses the degree of profitability of the farm, it can be related to the technical capital used, the turnover or the total production costs.	$Rv = ((\text{receipts} - \text{total expenses}) / \text{total expenses}) * 100$	Gavrilă I., Ghiță P., Nițescu D., Popescu C., Manual Economie, Ed Economică, 2000.
3	Profitability threshold	The break-even point is the level of activity or turnover that a farm must achieve in order to fully cover its fixed and variable expenses. Once the break-even point is reached, no loss or profit is made at the farm level.	Interpretation: Turnover = break-even point: zero result; Turnover > profitability threshold profit; Turnover < break-even point: loss.	Muntean G., Prag de rentabilitate, disponibil la http://gheomuntean.ro/
4	Exploitation risk rate	is determined by the inability of the company to adapt in time and at the lowest cost to changes in the environment in which it operates		Buglea A., Analiză financiară – concepte și studiu de caz, Ed. Mirton, Timișoara, 2005,
5	Security index	It expresses in percentage form how much the volume of sales can decrease so that the farm reaches the value corresponding to the break-even point.	$\text{Security margin} * / \text{Business figure}$	Muntean G., Prag de rentabilitate, disponibil la http://gheomuntean.ro/

*Security margin (MS) = turnover - profit

Source: economic publications and manuals, mentioned next to each indicator

- **Qualitative analysis**, carried out by disseminating the specialized literature in order to identify the determining factors in obtaining negative and / or positive economic results, at the level of zootechnical exploitation.

RESULTS AND DISCUSSION

In order to outline the profile of livestock farms, data were collected, by telephone, directly from farmers owning dairy farms, on the following characteristics of farms: size, geographical area, average production, total production, total production value and the value of average production, the level of total, fixed and average expenses, unit cost and capitalization price, labor productivity in value and physical expression. Thus, based on data collected directly from farmers and based on case studies conducted at the level of identified farms, numbering 24, we can conclude:

1. Farm size (number of heads): the size of livestock farms is larger in hilly and plain areas, and smaller in mountain areas. The farms with a higher number of animals are found on the territory of Sălaj and Teleorman counties.

2. Average production (l / head) and total production (l / farm): on the territory of the counties with larger farms in terms of the number of heads there are higher total milk productions (Sălaj and Teleorman). Regarding the average milk production obtained, there is a higher yield in the plain areas, there is an approximate difference of 1100 l / head, between the maximum yield recorded (Galați, plain) and the minimum yield recorded (Botoșani, hill).

3. Value of production (lei / l) and value of main production (lei / l): higher production values are recorded in the counties in the mountain area (Maramureș and Alba), and a lower value of it in the plain and hill counties (Teleorman and Botoșani). On farms with fewer heads and lower production, the value of milk production increases, as a medium to high price strategy is applied at the management level in order to reach the break-even point. At the level of farms with a higher level of milk production, a low price strategy can be practiced.

4. Expenditures: total, for the main production, variable, material, fixed, with labor: a higher level of total expenditures is identified in Maramureș, Alba and Sălaj counties, in mountain areas, respectively hill, and a lower level of expenditures in the plain and hill areas, respectively, in Ilfov and Botoșani counties. There is a link between a higher level of total production and a higher level of total expenditure. There is also a higher level of labor costs in mountain areas and a lower level in hilly or plain areas.

5. Unit cost and capitalization price: in all the analyzed counties, there is a level of unit production cost higher than the capitalization price, the biggest differences being registered on the territory of counties like Sălaj, Botoșani, Teleorman and Ilfov, from here resulting in negative economic results. Normally, the capitalization price is influenced by the cost of production, being necessary that the price level is at least at the level of the cost, even exceeding it, in order to be possible to obtain a positive financial result, respectively profit.

In turn, the cost of production is influenced by a number of factors, such as:

- a) *general factors*, such as: natural conditions, farm location, perishable nature of production;
- b) *technical-organizational factors*, such as: the size of the holding, the technical endowment, the type of production organization;
- c) *conjunctural factors*, such as: the economic cycle, the economic and social policy of the state, unforeseen natural phenomena, disturbing socio-political phenomena.

6. Labor productivity in physical and value expression: higher labor productivity, in value expression, in Sălaj, Teleorman and Botoșani counties, a hierarchy that is also found in the characteristic size of livestock farms. Thus, farms with a higher number of herds register a higher productivity in terms of value. In terms of physical productivity, it reaches higher values in counties such as Gorj, Maramureș and Alba, counties on whose territory the highest level of labor costs was recorded, in the counties analyzed.

As specified in the methods and materials section, for each farm, a *set of financial and economic indicators* was calculated in order to assess the economic performance of the analyzed farms (Table 2).

Table 2. Financial indicators resulting from the present research

Indicator / County	Profit or loss per unit of product	Rate of net taxable income	Rate of net income without subsidies	rate of net income with subsidies	Profitability threshold in value units (lei)	Profitability threshold in physical units (l)	Exploitation risk rate	Security index (Is)
IL (plain)1	-0.12	-8.78	-8.78	-3.62	7092.28	5466.55	172.63	-0.73
IL (plain)2	-0.04	-3.31	-3.31	2.28	6912.72	5459.67	130.51	-0.31
IL (plain)3	-0.20	-13.21	-13.21	-8.31	9324.19	7200.70	198.18	-0.98

IL (plain)4	-0.13	-8.72	-8.72	-3.94	8587.46	6135.92	169.66	-0.70
VL mountain 1	-0.11	-6.56	-5.90	-1.44	7717.18	5036.30	143.21	-0.43
VL mountain 2	-0.06	-3.84	-3.46	1.56	6964.24	4968.12	133.07	-0.33
VL mountain 3	-0.11	-7.94	-7.94	-7.94	6624.75	5107.27	181.32	-0.81
VL mountain 4	-0.11	-7.80	-7.02	-1.69	7494.43	5920.37	170.78	-0.71
TR plain 1	-0.10	-7.28	-7.28	-1.78	6511.02	5280.00	175.03	-0.75
TR plain 2	-0.29	-19.51	-19.51	-19.51	16875.18	14062.65	540.87	-4.41
TR plain 3	-0.13	-8.64	-7.78	-2.89	7552.39	5529.16	161.04	-0.61
PH hill 1	-0.09	-6.35	-5.72	-0.46	8314.16	6390.73	186.14	-0.86
PH hill 2	-0.08	-5.26	-5.26	-5.26	5522.51	3941.09	149.66	-0.50
PH hill3	-0.09	-5.33	-4.79	-4.79	5843.25	3728.73	141.60	-0.42
PH mountain 4	-0.15	-10.79	-10.79	-10.79	7433.58	6029.62	217.94	-1.18
GJ mountain 1	-0.10	-6.66	-6.66	-6.66	6018.36	4305.90	151.97	-0.52
GJ mountain 2	-0.23	-14.24	-14.24	-14.24	8070.89	5791.14	217.17	-1.17
GJ mountain 3	-0.04	-2.33	-2.09	-2.09	5363.40	3354.40	124.24	-0.24
BT hill1	-0.24	-18.08	-18.08	-18.08	16404.00	14956.76	571.60	-4.72
BT hill2	-0.24	-17.89	-17.89	-17.89	22429.82	20401.52	784.67	-6.85
MM mountain	-0.03	-1.26	-1.26	-1.26	7051.38	3059.25	113.31	-0.13
AB mountain	-0.09	-4.47	-4.47	-0.70	7682.30	4155.34	135.50	-0.36
SJ hill	-0.25	-15.38	-15.38	-10.97	14723.67	10507.57	340.79	-2.41
GL plain	-0.04	-2.37	-2.37	2.13	7202.90	4548.72	120.76	-0.21

Source: ADER 2412 project data processing Research on the economic efficiency of raising sheep, goats, dairy and beef cattle and buffaloes

Thus, following the calculations made, the following are mentioned, regarding:

1. Profit or loss per unit of product: The largest deficits are found in counties such as: Sălaj, Botoșani and Teleorman, the counties on whose territory the highest fixed or labor costs are recorded. Basically, the level of expenses exceeds the income obtained for a unit of product, thus resulting in economic losses and, at the same time, an unproductive activity. Also, on the territory of these counties, a larger farm size was observed, in terms of the number of heads, compared to the other farms.

2. Rate of net taxable income, rate of net income without subsidies, rate of net income with subsidies: there is a rate of net taxable income with higher negative values in Teleorman, Botoșani and Sălaj counties, as well as a rate of net income without subsidies higher small also within these counties. Regarding the net income rate, to which are added the subsidies, Galati county is the only county among those analyzed on the territory of which a positive income rate is registered, in the rest of the counties even with the help of subsidies the income rate remains negative, with values higher in Alba, Maramureș and Vâlcea county.

3. Profitability threshold in value units (lei) and physical units (l): In order to reach the profitability threshold at the level of the livestock farm, in Botoșani, Sălaj and Teleorman counties it is necessary to reach higher values in terms of value level and quantitatively, following the sale of milk production. The lowest thresholds were registered on the territory of Gorj, Prahova and Maramureș county.

4. Exploitation risk rate and security index: the counties with the highest exploitation rate are Botoșani, Teleorman and Prahova, these being also the counties with the highest level of expenditures or with the highest exploitation size.

Following those analyzed in the first part of this paper, we can classify characteristics of the farm's micro-environment, which can influence the economic results obtained, grouped in table 3 below:

Table3: Causal factors in the registration of negative economic results, at the level of the zootechnical exploitation

Nr. crt.	Factor type	Explanation / Cause	Solution
1	Size of the holding	Although normally a larger holding in terms of the number of animals should reflect a higher degree of its development, this does not necessarily correspond to a positive economic result, as long as the expenses necessary for the maintenance of the holding exceed the level of income obtained, the yield / animal in terms of milk production not being optimal.	Implementation at the level of the zootechnical farm techniques and tools, fixed, innovative means, with an advantageous cost / benefit ratio, which would improve the efficiency of milk / cow production, according to the requirements and mission identified at the level of the zootechnical farm.
2	Average production and total milk production	There is a higher level of total production on holdings with a higher number of animals, but the same cannot be said for the average production obtained. Achieving a higher level of milk production does not necessarily lead to ways to capitalize on optimal milk production, there are situations where facing a quantitative surplus in milk production, managers are forced to sell at a price that it is below the capitalization price, thus leading to a negative economic result.	Use of modern techniques for the exploitation of dairy cows, in order to obtain higher yields / animal, at competitive production costs.
3	Production value and total production value	It is noted, according to the principles of economics, that at the level of the livestock farm, where there is a higher supply in terms of quantity, it is possible to capitalize on a lower price compared to farms with a lower supply. from a quantitative point of view.	Adapting the supply to the existing demand on the market and using the capitalization price as an adjustment element on the agri-food chain.
4	Level of expenditure (total expenditure, expenditure on main production, variable expenditure, material expenditure, fixed expenditure, labor expenditure)	Of the total expenditure, it can be seen that the largest share is spent on the main production. The higher the level of cow's milk production in this case, the higher the level of expenditure incurred. Also, a higher level of labor costs is observed, in counties with holdings with a higher number of heads, not with a higher level of production.	It is recommended to automate the milking activities of cows, by purchasing special milking installations, being able to benefit from such advantages as: physical effort of the labor force considerably diminished; favorable conditions in terms of hygiene and comfort standards; Facilitating the maintenance of the vacuum at a constant level; finally, increasing the number of cows / farms and decreasing the costs related to the production process.

Source: interpretation of the results obtained in the present research

CONCLUSIONS

In conclusion, following those analyzed in the present material, but also following the other activities carried out within the ADER 2412 project (analysis of economic indicators for cattle farms; Dairy cow exploitation systems), the following can be stated:

1. A larger size of the livestock farm in terms of the number of heads does not always lead to high yields of production, and ultimately to high incomes or the break-even point. A well-developed dairy cow exploitation system, from the perspective of logistics and exploitation strategies, adapted to a high number of heads belonging to specialized breeds on milk or meat production, as the case may be, corresponds rather to obtaining qualifiers such as effectiveness, efficiency, competitiveness.

2. A high level of total milk production is not always synonymous with profit if it is not capitalized at a price that exceeds unit production costs and does not ensure demand and supply regulation;

3. From the point of view of the product strategy, at the production stage, one of the main objectives should be to focus on obtaining high yields / animal, and on obtaining high average yields, thus respecting fundamental economic principles, such as efficiency or effectiveness;

4. Elements such as production and price should be determined according to the existing demand on the market and its fluctuations, the degree of elasticity of demand.

5. Unit production costs should be reduced by making specific investments so that they do not exceed the capitalization price under any circumstances.

6. Under no circumstances, at the managerial level of the holding, the climatic, pedological and environmental factors must be neglected in the decision-making and strategic process. By following these coordinates and applying the decisions and strategies accordingly, indicators such as the security index or the rate of exploitation risk will be able to be in optimal parameters

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