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RESEARCH CONCERNING GROSS MARGIN IN DAIRY FARMING IN ROMANIA

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Rezumat. Lucrarea a avut ca scop prezentarea unei comparații privind Marja Bruta în ferme de vaci de diferite mărimi (12 vaci, 50 vaci, 150 vaci), producții de lapte (3,500 kg, 5,000 kg și 6,000 kg pe vacă/an) și statut juridic (fermă familiară, asociație familiară, fermă comercială). Pentru fiecare tip de fermă s-au determinat produsul brut, cheltuielile variabile, cheltuielile fixe, cheltuielile totale, marja brută, profitul brut și net, rata profitului. Analiza s-a bazat pe metodologia UE, care utilizează Marja Bruta ca măsură a mărimii afacerii. Cercetările au arătat că cu cât dimensiunea fermei este mai mare, cu atât producția de lapte, cheltuielile, produsul brut, marja brută, profitul net și rata profitului sunt mai mari. Ferma comercială a înregistrat 328,550 Euro/an marja brută, ferma asociației familiare a înregistrat 85,962 Euro/an, iar ferma familiară doar 12,502 Euro/an. Comparația cu Marja Bruta Standard a UE arată o mare diferență privind eficiența în creșterea vacilor din România.

Key words: Dairy farming, Economic efficiency, Farm size, Gross margin, Romania.

INTRODUCTION

Dairy Farming is an important sector of the Romanian agriculture, facing serious problems related to farm size, modern equipment and technologies, milk quality and milk marketing. Romania's entry into the EU in January 2007 is a real challenge for this sector, imposing the acceptance of Standard Gross Margin (SGM) as a barometer of cow and farm economic efficiency, a measure of business size, a way to classify farms according to their profile and contribution to the overall profit. SGM is calculated per cow and year for each farm, but also at region and country level. In the EU, SGMs are considered a representative of profit level that could be expected on the average farm under normal conditions. As being a measure of business size, within the EU statistical network, SGMs are measured in Euros and are presented in size ranges which related to the European Size Units (Agatha Popescu, E. Beck, S. Gyeresi, 2000; Agatha Popescu, 2003; 2006; 2006; 2007).

In this context, this study aimed to present a comparison between dairy farms of various herd size, average milk production and juridical status using Gross Margin per farm whose value was compared to Standard Gross Margin provided by Eurostat in order to establish in what kind of category each farm could be classified, how Romanian dairy business farms could be quoted compared to the EU standards (Ana Ursu et al., 2008).

MATERIAL AND METHOD

The experiments were organized in dairy farms of different size, juridical status and average milk production within a research project destined to set up guides for farm management helping farmers to improve their farm economic performance. In this paper is presented a comparison of Gross Margin recorded in three types of farms as follows: V1 – a family farm raising 12 dairy cows whose average milk yield was 3,500 kg /cow/year, V2 – a family association raising 50 dairy cows whose average milk yield was 5,000 kg/cow/lactation and V3 – a dairy commercial farm raising 150 cows whose average milk yield was 6,000 kg/cow/year.

Gross Margin was calculated according to the EU methodology based on the formula:

$$\text{GROSS MARGIN} = \text{GROSS PRODUCT} - \text{VARIABLE COSTS.}$$

Gross Product included income coming from milk (milk production evaluated at milk market price), income coming from sold calf (calf live weight evaluated at market price per kilogram live weight), culled cow sold to the slaughter house (cow live weight evaluated at market price per kilogram live weight), manure (amount of manure evaluated at market price per ton) and milk subsidies according to the Romanian Government decision in force.

Variable Costs included the following cost items: feeding, replacing heifer, veterinary services – treatments and artificial insemination service, electricity, watering, other materials, logistics, part time labor force, animal and crop insurance.

Also, in this paper Gross and Net Profit and Profit Rate were calculated according to the formulas:

$$\text{GROSS PROFIT} = \text{GROSS MARGIN} - \text{FIXED COSTS}$$

$$\text{NET PROFIT} = \text{GROSS PROFIT} - \text{PROFIT TAX}$$

$$\text{PROFIT RATE} = \text{GROSS OR NET PROFIT} / \text{TOTAL COSTS}$$

Fixed Costs included the following cost items: full time employees, fixed assets depreciation, general costs.

Gross Margin recorded by each type of farm was compared to Standard Gross Margin provided by Euro stat: ESU: less than 8 = very small, 8 – 40 small, 40 -100 medium, 100 - 200 large and over 200 very large. Calculations are made in Euro at an exchange rate, Euro = 3,5 Lei.

RESULTS AND DISCUSSIONS

The Gross Product was Euro 12,254 for V1, Euro 70,975 for V2 and Euro 251,174 for V3, showing that the higher the herd size, the higher the gross product. Also, the higher production level, the higher gross product.

Variables costs followed a similar trend, increasing from a farm to another according to farm size and average milk yield. A higher production per cow always requires higher feeding, veterinary services and other related costs. The value of Variable costs was: Euro 10,063 for V1, Euro 52,128 for V2 and Euro 174,445 for V3. The share of variable costs in total production costs was 83,71% in case of V1, 85,17% in case of V2 and 88,94% in case of V3.

Fixed costs registered an increasing trend also from the small farm to the largest farm: Euro 1,958 for V1, Euro 9,076 for V2 and Euro 21,673 for V3.

Total production Costs were Euro 12,021 for V1. In case of V2, their value was 5,09 times higher, Euro 61,204 and finally in case of V3, they registered Euro 196,118, being 16,31 times higher than in case of V1.

Table 1

Gross Margin/farm according to Average Milk Yield and Herd Size (Euro)

Specification	Average Milk Yield – kg/cow/year		
	V1 - 3,500	V2 – 5,000	V3 - 6,000
Number of dairy cows	12	50	150
Incomes	12,254	70,975	251,174
Subsidies	1,371	5,714	17,143
Gross Product	13,625	76,589	268,317
Variable Costs, of which:	10,063	52,128	174,445
- feeding	7,454	39,781	130,149
- replacing heifers	686	2,857	8,571
- veterinary services	289	1,275	4,050
- electricity	322	741	1,917
- other materials	180	750	2,250
- logistics	446	2,724	10,286
- part time labor force	-	-	3,508
- insurance	686	4,000	13,714
Fixed costs, of which:	1,958	9,076	21,673
- full time labor	1,288	5,140	8,149
- depreciation	497	3,129	10,543
- general costs	173	807	2,981
Total Costs	12,021	61,204	196,118
Gross Margin	3,562	24,461	93,872
Gross Profit	1,604	15,385	72,199
Profit Tax	257	2,462	11,552

Gross Margin recorded the following values: Euro 3,562 for V1, Euro 24,461 for V2 and Euro 93,872 for V3, showing that the larger the farm size and the higher milk production, the higher the gross margin.

Net Profit registered the following values: Euro 1,347 for V1, Euro 12,923 for V2 and Euro 60,647 for V3.

Profit rate was different from a farm to another, registering an increasing trend from the smallest to the largest farm as follows: V1 – 11,20 %, V2 – 21,11 % and V3 – 30,92 %.

Economic efficiency was superior in the largest farm taking to account profit/cow: Euro 133 for V1, Euro 308 for V2 and Euro 482 for V3 and profit per milk kilogram: Euro 0,038 for V1, Euro 0,061 for V2 and 0,080 for V3 and profit rate per cow: 13,27% for V1, 25,16% for V2 and 38,87% for V3 (table 2).

Table 2

Economic Efficiency in dairy farms of various size and milk yield

Specification	MU	V1	V2	V3
Dairy cows	Heads	12	50	150
Cost/cow	Euro/cow/year	1,002	1,224	1,307
Cost/milk kg	Euro/kg	0,28	0,24	0,22
Income/cow/year	Euro/cow/year	1,135	1,532	1,789
Profit/cow	Euro/cow	133	308	482
Profit/milk kg	Euro/kg	0,038	0,061	0,080

Comparison to European Union Standard Gross Margin. Taking into consideration that the economical farm dimension is Euro 1,200, the resulting economic size of each farm was 2,97 ESU for V1, 20,38 ESU for V2 and 78,22 ESU for V3, showing the difference of size business among the analyzed farms. The interpretation of these results is presented in table 3.

Table 3

Comparison with EU Standard Gross Margin

Specification	V1	V2	V3
Gross Margin /farm/year	3,562	24,461	93,872
Number of ESU	2,97	20,38	78,27
Farm business Assessment	Very small	Small	Medium

CONCLUSIONS

1. Gross margin is a barometer of economic efficiency in dairy farms showing how much gross product is achieved per each unit of variable costs.

2. Gross margin recorded by each analyzed farm was: Euro 328,550 /year at 30.90 % profit rate for V1, Euro 85,962 per year and 21.25 % profit rate for V2 and finally Euro 12,502 per year and 9.93 % profit rate for V3.

3. The higher the farm size and milk production, the higher gross margin, net profit and profit rate.

4. The farm raising 12 cows, producing 3,500 kg milk /head/year has recorded 2,97 ESU which allows that its business is very small according to the EU standards. This means that small farms of such a type are not profitable.

5. The farm raising 50 cows, producing 5,000 kg milk /cow/year has a small business, because it registered 20,38 ESU.

6. The farm raising 150 cows, producing 6,000 kg milk/head yearly has a medium business size according to the EU standards.

7. As final conclusion, farm size is still very small and does not allow higher economic performance expressed in gross margin and profit. Milk production has to be over 6,000 kg per cow/lactation and farm size has to be about 150 dairy cows to classify farm business in a medium class according to the EU standards.

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