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DYNAMICS OF DAIRY COWS HOLDINGS DIMENSIONAL STRUCTURE AND THEIR ECONOMIC PERFORMANCES

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Abstract

The present paper presents the evolution of dairy cows holdings dimensional structure during 2010-2016, based on the operational statistical information, also comparing the economic indicators of the farms of different sizes. Romania's agriculture is one of great diversity in terms of farm structure, production methods and technologies used. This diversity reflects climatic conditions, topography and the evolution of socio-economic environment. The results of the study indicate that total number of dairy cows increased by about 1% during the study period, while the number of cows' holdings decreased by 20.6%, demonstrating a higher concentration of the flocks. At structural level, most holdings are represented by 1-2 head households, and the farms with 100 heads are the fewest. Structural dynamics is positive, because the holdings with 1-2 heads decreased from 87.27% in 2010 to 83.72% in 2016, while farms with more than 100 heads increased from 0.04% to 0.07%. At the level of economic indicators, the farms with larger flocks get higher economic outcomes than the small ones, due to the possibility of using high-tech technologies, access to various support programs, stronger position on the market, and capitalization of economic results.

Key words**:** *holdings, cows, structure, economic*

INTRODUCTION

The evolution of agriculture in developed countries highlights the concerns of increasing the size of holdings, statistics surprising their evolution over time, while reducing the number of farms.

By dimension is meant that area (livestock) that ensures the optimal conditions for the use of all material and human resources in accordance with the production structure and technologies used in agricultural holdings in order to achieve the proposed objectives. [4]

It is a common assumption that a larger size of the holding favours the increase in the use of the labour force, the fixed and circulating capital etc., having direct and beneficial consequences on the economic and social viability of the commercial agricultural holdings.

Production outputs, of course, also depend on the volume of resources and the way they are valued, although their low degree of concentration in family farms makes difficult the exploitation process. [3]

MATERIALS AND METHODS

The purpose of this study is to identify the evolution of dairy cows holdings dimensional structure, based on the operational statistical information from specialty department in the Ministry of Agriculture and Rural Development, since 2010 to 2016. Also, using established economic formulas, different economic indicators were calculated for holdings of different sizes, comparing different types of costs and profitability.

RESULTS AND DISCUSSIONS

The results of research shows that on April 30, 2010, there were 761,528 cows' holdings, with 1,396,886 heads. Six years later, on April 30, 2016, the number of holdings decreased significantly by 20.6%, reaching 604,473 units, but the number of cows increased by 1% during the period under study, showing a higher concentration of the flocks (Figure 1). This reduction is based on the disappearance of a large number of small, economically unviable dairy cows holdings each year. [10]

Much of the pressures to adjust the farm structure take place on small farms, less competitive, who have to make efforts in the process of increasing productivity and diversify incomes, or find alternative activity. This adjustment is a stage that developed countries have already gone through. [5]

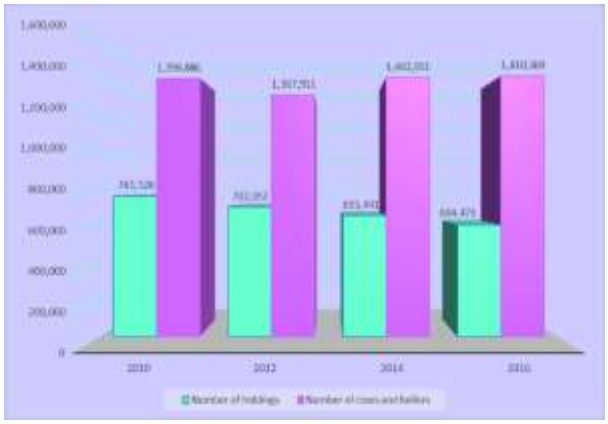

Fig. 1. Evolution of number of holdings, cows and heifers
Source: Ministry of Agriculture and Rural Development [6]

Regarding dimensional structure of holdings, it can be observed the most part of it (over 80%) are with 1-2 cows that are subsistence farms, non-commercial, producing only for family consumption. The subsistence and semi-subsistence holdings, seen in the general agricultural landscape of Romania, give the image of crumbled agriculture. [9]
The equilibrium dimension of the farm (in the case of the family commercial farm) tends to grow with economic development. [5]

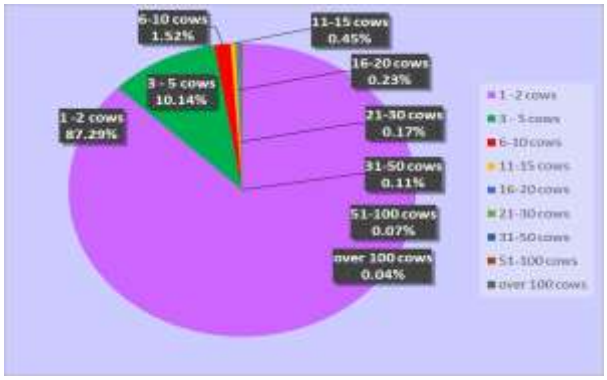

Fig. 2. Dimensional structure of holdings in 2010
Source: Ministry of Agriculture and Rural Development [6]
In the Figure 2, there is illustrated dimensional structure of holdings in 2010.

It is obvious that the share of different categories of holdings decreases while the number of cows and heifers increases.
In the Figure 3, is illustrated dimensional structure in 2016, with a positive trend of decreasing small farms share and increasing larger ones: the category 1-2 heads decreased from 87.27% in 2010 to 83.72% in 2016, while farms with more than 100 heads increased from 0.04% to 0.07%.

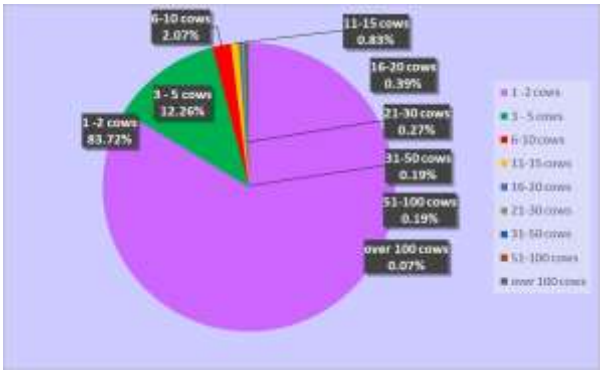

Fig. 3. Dimensional structure of holdings in 2016
Source: Ministry of Agriculture and Rural Development [6]

Along with improving technologies and with more efficient use of resources, small farmers who do not participate in the cost reduction competition will inevitably face revenue pressures. In front of these pressures there are only two options, either to reach the level (including size) of efficient commercial farms, or to seek extra revenue from other sources (through diversification sources of income or leaving the sector). [5]
Regarding the number of cows, the most part of them are in the smallest farms, with 1-2 cows.
In the year 2010, there were 60% of cows in farms with 1-2 heads, 19% in 3-5 heads, 6% in 6-10 heads etc. and only 4% in over 100 heads category (Figure 4).
Romania has certain structural characteristics similar to those of the agricultural sectors of the other EU Member States, but it is unique in terms of the size of the gap between the category of farms and small farms and the prevalence of subsistence / semi-subsistence farming. [7]

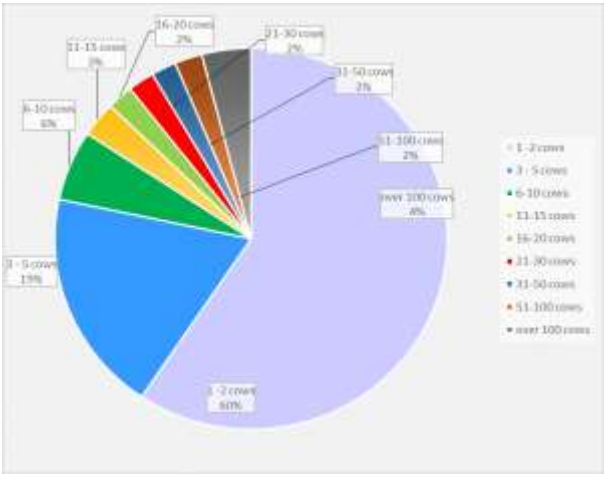

Fig. 4. Distribution of number of cows in different types of holdings in 2010
Source: Ministry of Agriculture and Rural Development [6]

The share of cows in 1-2 heads category decreased in 2016 at 50% and in category over 100 heads increased at 7% (see Figure 5). This was a general positive trend in all categories, toward increasing the number of cows in larger size holdings.

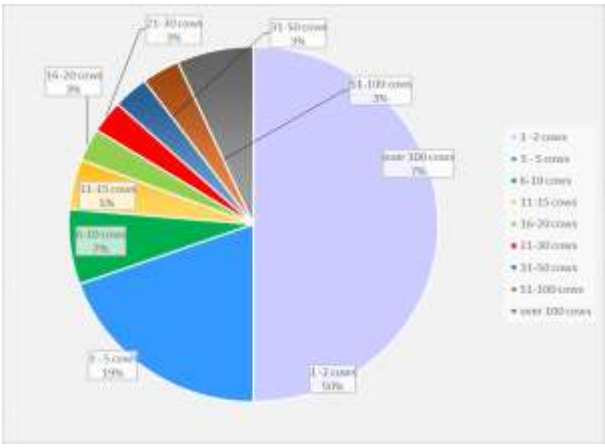

Fig. 5. Distribution of number of cows in different types of holdings in 2016
Source: Ministry of Agriculture and Rural Development [6]

Facing these realities, it is necessary to develop appropriate policies for Romanian farmers, starting from the dual structure of the agricultural sector, so as to meet the specific needs of each segment (large and medium-sized farms stimulated to become even more competitive, but also solutions for the development of agriculture on a small scale.
Small farmers have difficulties in complying with the requirements of milk hygiene, have low efficiency, are not organized, do not benefit from consultancy and market information.
Better integration of farmers on market and on value chain is needed. For small producers, the emphasis should be on stimulating the association and improving access to investment credits, while for large farms there is a need for modernization investments to comply with EU requirements and for increasing competitiveness on international market. [7]
The data indicate that, during 2010-2016, large farms with over 100 cows have almost doubled their flocks, showing that their evolution has been positive, both technologically and economically (Figure 6).

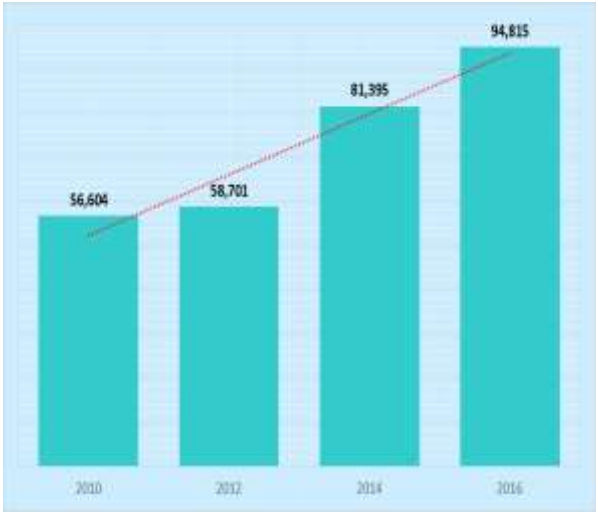

Fig. 6. Evolution of number of cows in the category over 100 heads (heads)
Source: Ministry of Agriculture and Rural Development [6]

This dynamics highlights the trend of a slow motion from the agriculture of subsistence to commercial agriculture, on a competitive arena of international market.
Economic calculations highlight the fact that the increase in the physical size of farms is correlated with the increase in their economic size and the economic efficiency is superior to those with larger dimensions. Thus, production costs per litre of milk are lower in a holding with over 100 heads where the degree of technology and yields are higher than in a farm with 20 cows (Figure 7).

Fig. 7. Economic indicators for milk in farms with 20 cows and 100 cows (RON/litre of milk)
Source: Own calculations

The issue of the dimension of holdings largely refers to the viability of small farms [2].
There are factors that act in the direction of increasing the size of farms: automation, mechanization, modern technologies, transport routes, production specialization, increasing managerial capacity, etc. Factors that undermine the growth of farm size are: transport costs, veterinary requirements, the need for environmental protection, etc.
There are factors that act in both directions, such as population density, water sources, production systems, types of economic and social organization, etc [1].

CONCLUSIONS

Low development of agricultural products marketing or acquiring production factors is notorious for individual farms. Small farmers, with a few cows, low equipment and livestock endowment, with no advanced knowledge in the field and lacking financial resources, choose for "low risk - low yields" production strategies. [4]
The lack of specialization and diversification of production within the small farms leads to the obtaining of small quantities of different products and different qualities which make difficult to capitalize on them. This makes impossible to apply intensive high productivity technologies.
In order to move from the predominance of subsistence cows farms to commercial ones, integrated into market, it is necessary:
-stimulating the organizing of associative forms;
-strengthening the financial resources of cows' holdings through budgetary resources for investment projects for well-defined objectives, in order to increase the performance capacity of dairy farms;
-formation of a financial market (credit) functional in rural areas to provide the possibility of collecting money, increasing the access of agricultural producers to capital sources, etc. [8]
-using the opportunities created by European funds for the modernization and re-technology of cows farms, etc.

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