

## RESEARCH ON EVOLUTION OF MILK PRODUCTION AT NATIONAL AND EUROPEAN LEVEL

Ion Tudor COMAN, Livia VIDU, Gheorghe Emil MĂRGINEAN

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd,  
District 1, Bucharest, Romania

Corresponding author email: liviavidu@gmail.com

### Abstract

*The paper aims to present the evolution of Milk Production during the period 2007 -2016 in Romania and also in the European Union. It is based on the statistical data provided by the National Institute of Statistics, the Food and Agriculture Organization of the United Nations, Eurostat and other open sources. During the analyzed period, livestock has continuously decreased in Romania, compared to the year of Romania's accession in the European Union (2007), in 2016 the livestock (dairy cow) was 418,109 less, representing a smaller percentage of 25.82% of livestock in 2016 as compared to 2007. In comparison to the production of cow milk achieved in the first year of Romania's accession to the European Union, production of 2016 is lower by 184,420 tons, respectively by 16.22%. Regarding the productivity of the milk quantity, in relation to the number of existing dairy cows, it is noticed that the productivity increased in 2016, ie if in 2007 there was a production of 1,136,372 tons of milk with a number of 1,619,241 dairy cows, in 2016 there was a production of 951,952 tons of milk with a total of 1,201,132, respectively milk production per dairy cow increased from 0.70 tons in 2007 to 0.79 tons of milk per cow in 2016, the productivity increase being about 13% expressed as a percentage.*

**Key words:** dairy cows, evolution, milk production, Romania.

### INTRODUCTION

In Romania, agriculture traditionally occupies an important position in the national industry, representing the field that generates food and raw materials for the agro-food industry. The massive fragmentation of property, the existence of a large number of cows holdings with a reduced number of animals, reduced productivity and high self-consumption of own products in households generate important structural problems in Romanian agriculture. Due to the low level of labor productivity and given that the Romanian food industry fails to provide enough products to cover the high demand for food products, the Romanian agricultural industry cannot compete with some EU Member States that have a developed industry, with high productivity.

Of agricultural products, the dairy sector is the most difficult and delicate problem of the national economy; it is difficult because in the period following 1989, little progress has been made in terms of the effectiveness of this sector, incomparably less than in the rest of the European countries and delicate, because

decisive, immediate restructuring and modernization measures have to be taken of the sector.

### MATERIALS AND METHODS

In order to characterize the evolution of milk production, the following indicators were used: number of cattle stock, of which dairy cows and heifers, milk yield and total milk production.

The period analysed in this study was 2007-2016.

The data, collected from the Romanian and international institutions already mentioned have been processed in data mining form, resulting in metadata.

### RESULTS AND DISCUSSIONS

Milk is produced on a large scale in the European Union, totaling 165 million tonnes in 28 EU Member States in 2014 (Eurostat 2015 source), with the European Union contributing around 24% to total world production (FAO statistics 2015). Under these circumstances,

the EU is a major player on the world milk market, as can be seen in Figures 1 and 2, which are realised from informations available on the Eurostat website.

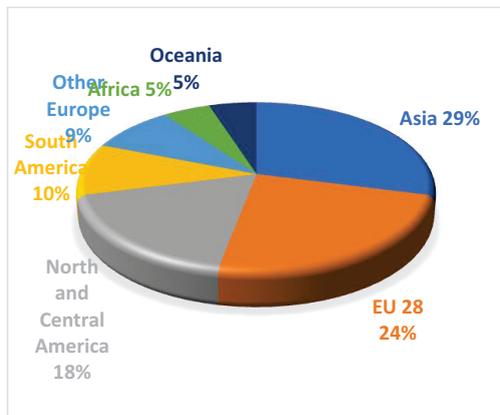


Figure 1. Milk production in 2015 by region

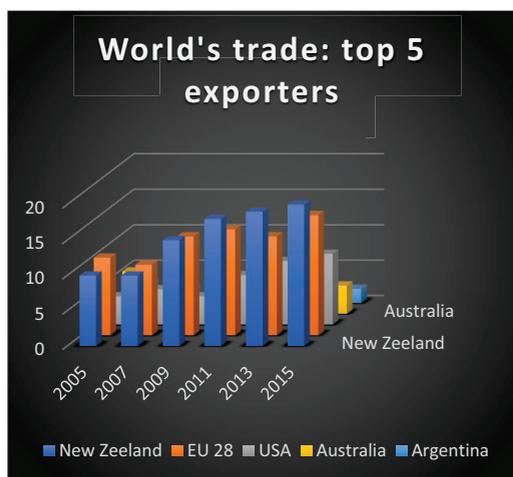


Figure 2. First 5 exporters of milk by region/country in 2015

Germany and France are the main producers within the European Union, producing almost 40% of total EU production. Other major Community producers are the United Kingdom (10%), the Netherlands (8%), Poland and Italy (both with 7%).

Next, before presenting and analyzing the evolution of milk production in our country, we will present some statistical data regarding the evolution of dairy cattle heads in Romania, given that the number of dairy cows has an impact on milk production in a way directly,

together with the productivity of each animal, after the date of accession of Romania to the European Union until 2016 (the last year with statistical data), using as the annual reference date 1 June, with informations available on the website of the National Institute of Statistics and the Ministry of Agriculture and Rural Development (Table 1).

Table 1. The number of dairy cows in Romania at the reference date of June 1 of each marked year

Year	Number of cows	Diferences +/- from the last year
2007	1,619,241	+ 3.105
2008	1,578,909	- 40.332
2009	1,512,329	- 66.580
2010	1,431,406	- 80.923
2011	1,181,140	- 250.266
2012	1,187,578	+ 6.438
2013	1,193,771	+ 6.193
2014	1,192,024	- 1.747
2015	1,200,915	+ 8.891
2016	1,201,132	+ 217

From the analysis of the data presented above, the following conclusions can be drawn:

- Compared to the year of Romania's accession to the European Union (2007), in 2016 the national dairy herd numbered less by 418,109 heads, representing a smaller percentage of 25.82% of animals in 2016 as compared to 2007;
- Since 2007, the dairy herd has experienced a sharp decline, reaching a critical level of 250,266 animals in minus in 2011 compared to 2010;
- From 2012, the stock of livestock has grown, reduced in number but constant, except in 2014.

From the analysis of the data presented above, obtained from informations available on the website of the National Institute of Statistics and the Ministry of Agriculture and Rural Development we can present the following observations:

- The cow's milk production in our country declined annually, starting with the first year after Romania's accession to the European Union, with the exception of 2014, when it grew by 13%, and of 2016 when it increased by 3.6% compared to the previous year;

Table 2. The production of cow's milk produced in Romania between 2007 and 2016

Year	Production (tones)	Diferences from last year (+/-) in tons
2007	1,136,372	+3,250
2008	1,051,481	-84,891
2009	991,588	-59,893
2010	903,750	-87,838
2011	897,348	-6,402
2012	887,854	-9,494
2013	882,381	-5,473
2014	996,653	+114,272
2015	915,874	- 80,779
2016	951,952	+32,655

- As compared to the production of cow's milk in the first year of Romania's accession to the European Union, the production of 2016 is lower by 184,420 tons, ie by 16.22%;

- From the point of view of the productivity of the quantity of milk, in relation to the number of existing dairy cows, it is noticed that the productivity increased in 2016, ie if in 2007 there was a production of 1,136,372 tons of milk with a flock of 1,619,241 dairy cows, in 2016 there was a production of 951,952 tons of milk with a total of 1,201,132, respectively milk production per dairy cow increased from 0.70 tons in 2007 to 0.79 tonnes of milk per head of cow in 2016, the productivity increase being about 13% expressed as a percentage (Tables 1 and 2).

#### **European level**

As far as dairy cows are concerned at European level, the number of dairy cows in the EU (with 28 Member States) in 2016 was 23.5 million head, a decrease of 0.2% (46,890) compared to the year 2015.

Germany held the largest number of dairy cows in all EU countries in 2016 and 4.2 million heads respectively, representing 17.9% of the total EU-28 dairy cow population. Malta continues to be the smallest milk producer with only 6,500 dairy cows in 2016, up 2.0% over 2015. More than half of the EU-28 countries have reduced their number of cows in 2016, with Germany registering the largest absolute decrease - 66,940 cows less than in 2015.

The Netherlands recorded the largest absolute increase in the number of dairy cows in the EU-28 in 2016, up 77,000 (4.5%) compared to 2015.

Britain accounted for 8.2% of all dairy cows in the EU-28 in 2016, reaching 1.9 million heads,

with an increase of 2,000 cows (0.1%) over the previous year.

#### **Milk production within the European Union**

Over a period of 30 years, the dairy sector in the European Union has been operating under the milk quota scheme, which was introduced in 1984 to manage the issue of over-milk production.

After five years of preparation, in order to ensure a smooth transition, milk quotas disappeared on 1 April 2015.

In the European Union of 2015, the production of raw cow's milk slightly increased (+0.8%), the price of farm milk decreased, and the number of dairy cows remained stable (+0.2%). However, at national level, the dairy herd grew strongly in several countries (+9.9% in Ireland and +6.6% in the Netherlands), while it decreased in 18 Member States. Belgium, Denmark and the United Kingdom recorded similar but less significant increases. Cow's milk production followed national trends in cows' milk (+14% in Ireland and +5.3% in the Netherlands). In many EU countries, the decrease in the number of dairy cows was offset by a rise in productivity. Crude milk production declined in only seven Member States. The increase in cow's milk production was the most spectacular in Greece, where the 18% decrease in the dairy herd had no impact on milk production, although it related to a smaller flock.

Dairy cow milk production increased by 1.5% in the EU between 2014 and 2015, reaching almost 6,900 kg per dairy cow. In the Czech Republic, Spain, Hungary and Poland, milk production increased by 320 - 420 kg per capita, also reflecting the development of the most productive farms and the cessation of milking in the least productive.

In 2015, 168.2 million tonnes of milk were produced in the European Union, of which 96.8% of cow's milk.

More than one fifth (21.0%) of the total cow's milk collected by dairy factories in the EU-28 in 2015 was collected in Germany, while slightly more than one-sixth of the total (16.7%) was collected by dairy factories in France, as can be seen in the following graph, which shows the distribution of cow's milk collected from Member States (Figure 3).

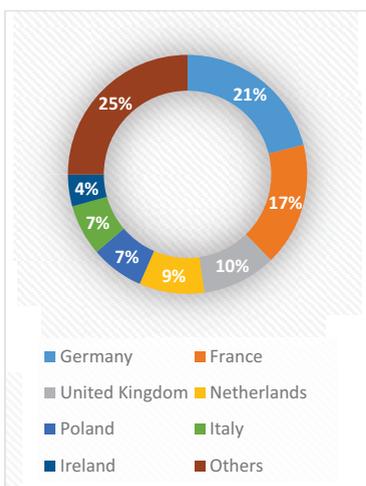


Figure 3. The distribution of collected cow's milk per Member State (Eurostat website)

Table 3. The production of cow's milk on farms at national and regional level in the European Union in 2014 - 2016

Country/ Collection year	2014	2015	2016
France	26,341.58	26,461.05	25,618.50
Netherlands	13,093.70	14,024.00	15,090.00
United Kingdom	14,887.80	15,272.60	14,732.54
Italy	12,492.51	12,499.27	13,321.70
Poland	:	10,876.26	11,142.63
Turkey	8,725.10	9,033.60	9,304.50
Denmark	5,122.40	5,278.90	5,385.00
Switzerland	3,544.24	3,489.13	3,436.35
Austria	3,151.19	3,215.11	3,271.64
Sweden	2,962.38	2,956.48	2,883.99
Finland	2,367.03	2,398.13	2,389.71
Portugal	1,947.16	2,008.99	1,935.43
Norway	:	1,590.00	1,594.00
Greece	1,394.60	1,350.73	1,421.00
<b>Romania</b>	<b>:</b>	<b>1,070.42</b>	<b>1,153.83</b>
Serbia	833.28	864.57	847.36
Estonia	735.91	729.70	719.75
Bulgaria	572.65	566.31	609.63
Slovenia	552.48	572.30	583.66
Cyprus	209.69	220.62	251.28
Albania	113.90	125.20	125.00
Malta	42.77	41.57	43.13
Montenegro	26.10	24.10	24.50

According to the chart below, generated by Eurostat, Romania occupies the thirteenth position regarding the collection of cow's milk among the Member States of the European Union (Table 3).

The phenomenon of the increase in total and at the same time of the milk production, of course in different proportions, does not manifest in the continents that comprise the vast majority of the industrialized countries of the world, but here there are decreases in cows, but with strong growth of average milk production per cow.

## ACKNOWLEDGEMENTS

This research work was carried out with the data and information's available from the National Statistics Institute, Food and Agriculture Organization of the United Nations, and other open sources.

## CONCLUSIONS

In 2016 the milk production in Romania was lower by 184,420 tons, respectively by 16.22%, compared to the production of cow milk achieved in the first year of Romania's accession to the European Union.

The productivity of the milk quantity, in relation to the number of existing dairy cows increased about 13% in 2016, from 0.70 tons in 2007 to 0.79 tons of milk per cow in 2016.

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