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MILK QUANTITY AND QUALITY IN A DAIRY UNIT-STUDY CASE

Paul-Rodian TAPALOAGA

University of Agronomical Sciences and Veterinary Medicine, Mărăşti 59 Ave, Bucharest, Romania

Corresponding author email: rodiantapaloaga@yahoo.com

Abstract

Milk is proved a complete food from latest scientific researchers. Milk and dairy products contain many nutrients and provide quick and easy way of supplying major vital substances in human being life. Due to their importance, their benefits to our bodies, health and mind, but not neglecting the financial aspects, many dairy units and also the processing units have to assure large amounts of good quality milk. The present study is a study case regarding the quantitative and qualitative milk amount in a dairy farm in the south of Romania. The livestock in the studied farm consisted in Holstein-Frisian cows in different stages of lactation, which were statistically analyzed from the milk quality and quantity point of view. During April 2011 and May 2012, based on the primary data recorded in the farm it was established the reproductive livestock, grouping the females in three categories depending on their lactation. There were recorded the cows in lactation and also the dry cows and the dynamic of the milk production was recorded daily and monthly, too. Due to the fact that the milk is processed in a special unit and after that goes to the market, the milk quality parameters were analyzed too. The recorded situation leads to the conclusion that the unit represents a high class unit in the Romanian dairy units.

Key words: *normal lactation, reproductive livestock, dry-period, chemical, physical, parameters.*

INTRODUCTION

In human beings nutrition, animal origin food products have a great importance assuring the energy and the basic substances necessary to metabolic processes, raising and development of organisms (Ilie et al., 2011; Tapaloaga, 2008; Tapaloaga, 2012). Milk is the most important product due to its complex chemical composition, biologic value and the high digestibility range. Thus, the present paper has as aim the study of the milk production in a modern farm located in the southern Romania.

MATERIALS AND METHODS

The study of milk production in S.C. ILYA AGRO S.R.L. was carried out having in view the quantitative and also qualitative aspects. During a whole year, since April 2011 and May 2012, we have recorded and processed the data of the cattle farm and calculated the mean achieved productions. Based on the primary data we have established the main technological parameters of milk production: reproductive livestock, number of lactating cows, number of cows in dry period, number of animals in different lactations, mean milk production per each female, daily mean milk production. Meanwhile we have established the milk production evolution at different lactations and the evolution of the total milk production during the whole year. There were also calculated the fat and protein percentage in milk per the whole farm, and also the useful substance index, an important indicator in the milk processing industry, due to its influence in cheese processing. The data were expressed in absolute and relative values from the whole livestock. The data were statistically processed, and the fat and protein percentage were determined by the stipulated standards (Ilie et al., 2011; Petcu, 2006; Tapaloaga, 2008).

RESULTS AND DISCUSSIONS

The evolution of the milk production and main parameters in the studied unit are presented in the following charts. It may remark that from the whole reproductive livestock, which had a low evolution, starting from 392 females in September 2011 and 418 females in May 2011, the number of lactating cows represented 77.14% of the whole livestock in November 2011 and 90.44% in April 2011. The rest of the females, the ones in the dry period represented between 9.56% of the whole livestock in May

2011 and 22.86% in November, the same year, as is seen in chart 1. Comparatively the results quoted in the special literature, the values recorded in S.C.ILYA AGRO S.R.L are superior regarding the percentage of the lactating females, this thing being explained by the fact that this farm is almost new, and the female introduced in the livestock were in lactation.

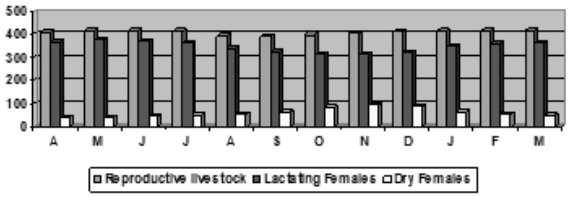

Figure 1. Female distribution during the studied year

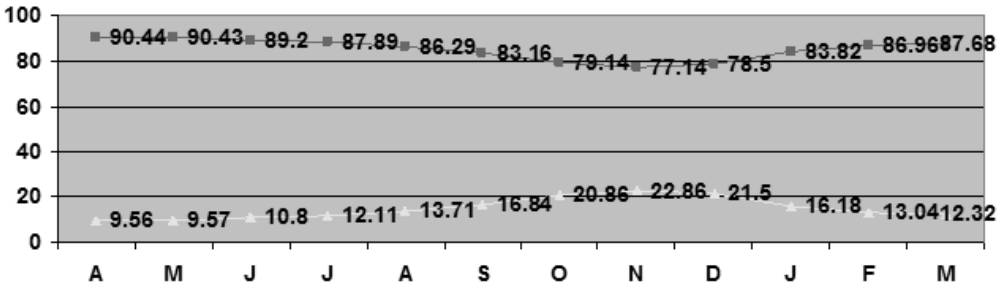

Figure 2. Female distribution at the first lactation

Upon the recorded data, we remarked that the number of the females in the first lactation varied between 105 cows in March 2012 and 212 cows in May 2011.

The average milk production per female oscillated between 18 l per day in July 2012 and 25.1 l per day in March, the same year. On the entire farm, the mean milk production varied between 2438.l in January 2012 and 4388.4 l in May 2011. Chart 3 illustrated the evolution of milk yield per day in the analyzed period.

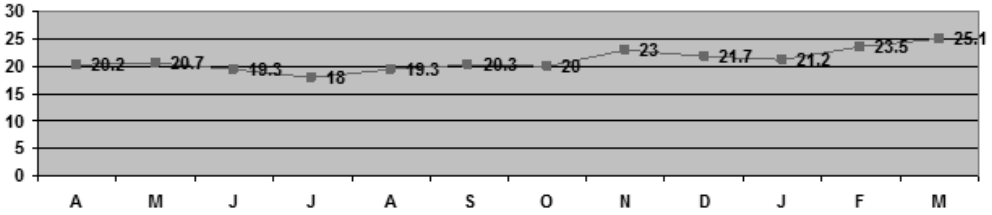

Figure 3. Milk production distribution at the first lactation

In chart number 4, it is presented synthetically the evolution of the milk production in the second lactation. Based upon the primary recorded data, it could notice that the number of the female in the second lactation is inferior the ones at the first lactation, due to the new livestock. The milk mean production at the second lactation oscillated between 19.6 l per day in July 2011 and 31.6 l in March 2012.The mean production recorded in the females at the second lactation had an increasing trend,

starting from 1509.2 l in July 2011 to 3918.4 l in the last studied month.

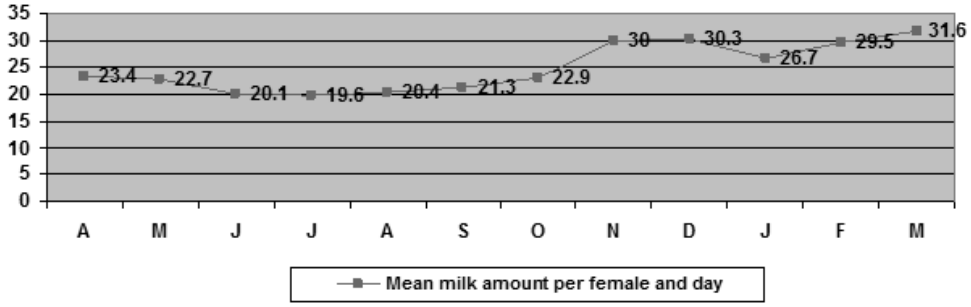

Figure 4. Milk production distribution at the second lactation

Milk production in cows at the third lactation is presented in chart 5. By the recorded date we remarked the increasing trend of the females' number in this category, starting from 88 females in April 2011, to 135 females in February 2012.

The milk amount in this category varied between 19.5 l in July 2011 and 30 l milk in December 2011, these values being inferior to those recorded in the case of the females in the second lactation. Regarding the mean milk production, we noticed that this parameter had superior values besides the ones recorded in females at the second lactation, oscillating between 1821.6 l in June and 3825.8 l in March.

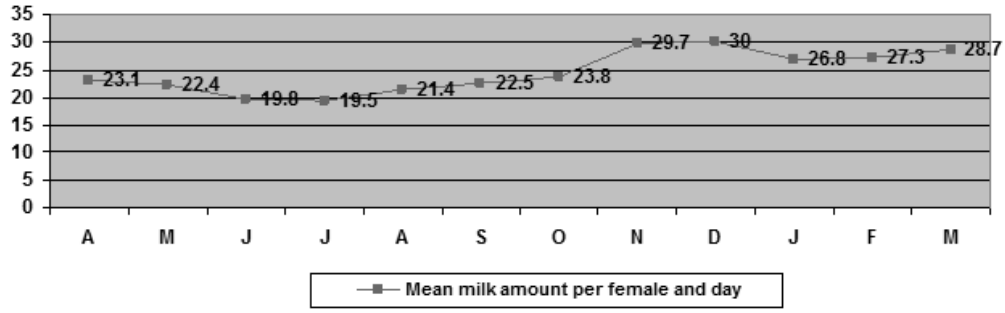

Figure 5. Milk production distribution at the third lactation

By the whole, the milk production dynamics in the three lactations and also daily and monthly is synthetically shown in the following charts. Regarding the total daily amount, it may notice that it exceeded 6801.2 kg l (recorded in July 2011), to almost 10400 kg in the last studied months, these values summing 2945607.7 kg for the whole year.

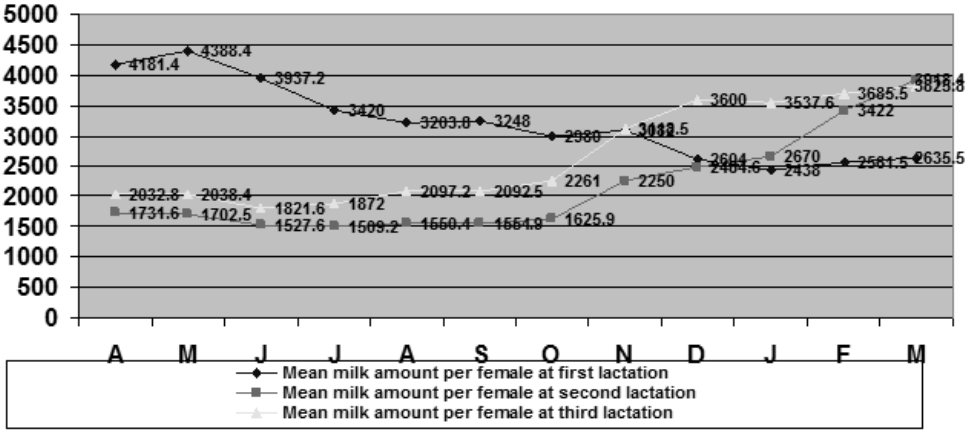

Figure 6. The synthetically dynamics of milk production in the whole livestock, monthly

In chart 7 we may notice the milk production dynamics achieved by the studied females, separately by the three lactation period. It may remark the superiority of the values recorded during the second lactation.

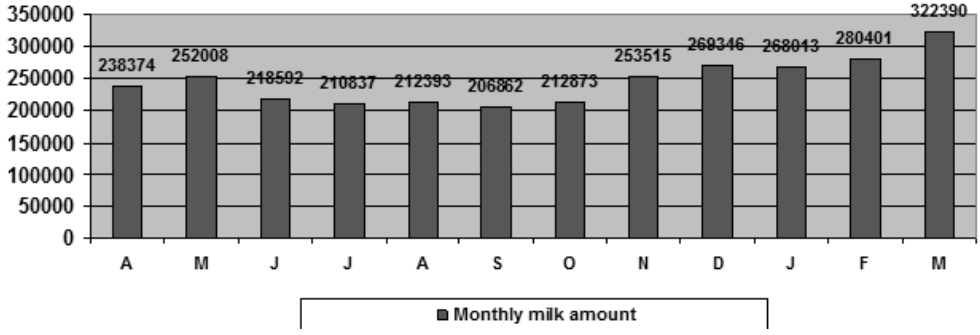

Figure 7. Milk dynamics per whole lactation

In this paper it was followed the quantitative milk amount. Based upon the primary data and after milk samples processing in the laboratory, in charts 8, 9, 10 are presented the evolution of milk amount, fat amount and protein amount in the studied interval, in absolute and also relative values. Beside these values, there are presented too, the values of the useful substance, an important index for animal breeding in our country (Ilie et al., 2010; Savu and Petcu, 2002; Tapaloaga, 2008; Tapaloaga, 2012).

It may notice that in the studied interval, in this farm, the milk fat and protein content varied as the ones in the special literature, framing within 3.90 and for milk fat and 3.31% and 3.40% for milk protein, conformingly these breeds standards. It also could be remarked that the recorded value do not significantly vary depending on season this fact could be justify by the fact that these animals are stock feed by and the seasonal feed does not influence.

The milk fat amount varied from 8046.9 kg in September 2011, to 12863.4 kg in March 2012. The milk protein amount varied from 6971.2 kg in September 2011, to 23728.0 kg in March 2012. Chart 8 presented the evolution of milk fat during the study interval.

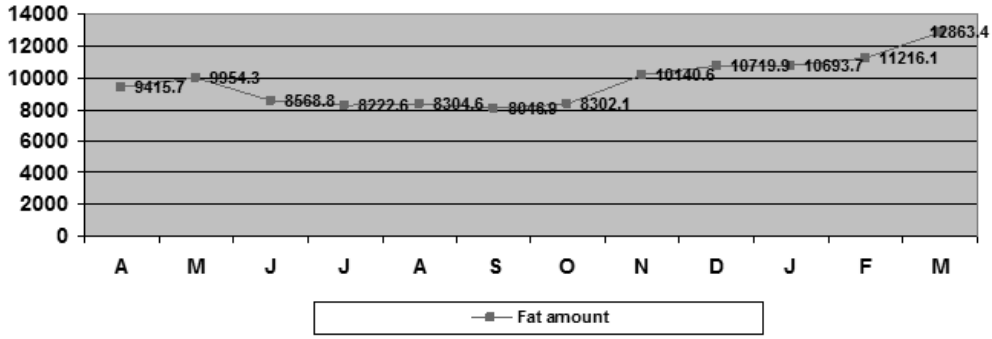

Figure 8. Fat percentage dynamics

Chart 9 presents by short the evolution of milk protein during the studied interval.

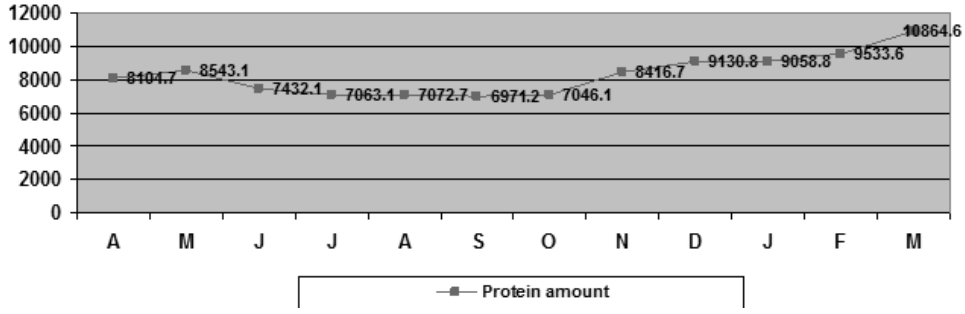

Figure 9. Protein percentage dynamics

As the two indicators, milk protein and fat, the useful substance had almost the same dynamics, emphasizing the special breeding value of the reproductive livestock in this farm, recording a mean value of more than 500 kg useful substance per individuals. The evolution of this index is shown in chart 10.

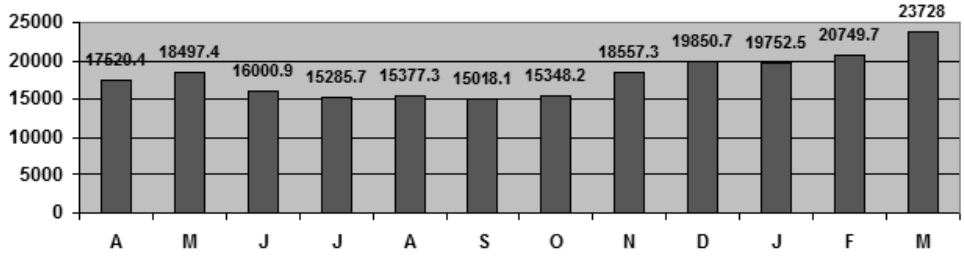

Figure 10. Useful substance dynamics

CONCLUSIONS

Based upon the technologic flow study and the quantitative and qualitative milk amount in S.C. ILYA AGRO S.R.L. we can conclude the following:

The reproductive livestock during the studied interval oscillated between 392 cattle (in

September 2011) and 418 cattle (in May 2011). The lactating females represented 90.44% (in April 2011) and minimum 77.14% (in November 2011), this value being framed within the limits recommended by the special guides to assure a high economic efficiency in dairy cows raising.

Comparing the milk production achieved by each animal category (first lactation cows, second lactation cows and third lactation and more cows) we could notice that during the first part of the studied interval, the percentage of cows at first lactation is superior to the percentage of the other two categories, but in the second part of the interval, this percentage had a decreasing trend to the last month of the study. This fact could be explained by the fact that the first interval of the study is the period of the farm beginning, with a large number of young females, at first lactation, these during the time, passing in the superior categories.

So, based upon the obtained results, this unit is included in the top economic efficient farm in the south of Romania.

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