

STUDY ON THE FACTORS INFLUENCING COW MILK PRODUCTION IN DAIRY COWS

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Abstract: Cow milk production in cattle on dairy farms is influenced by a series of factors such as the factors influencing individual production and factors that influence total, delivered production. Since cow milk production varies from dairy cow to dairy cow, the factors influencing it can be grouped into factors that influence it directly and factors that influence it indirectly. Knowing these factors is extremely important since some of them have a negative influence on cow milk production; this is why their action should be limited unlike other factors that have a positive influence and whose action should be stimulated. Milk production per dairy cow depends, on one hand, on genetic potential and on individual development conditions that determine the so-called "productive capacity" and, on the other hand, by the environmental and exploitation conditions that turn this productive capacity into reality or not. Therefore, real cow milk production per dairy cow is influenced by both heredity and environmental conditions that can favour or hinder a genetically determined cow milk production.

Keywords: dairy cow, cow milk, influence factors

INTRODUCTION

The raising of cattle ranks among the first in both Romania and abroad in animal production [3]. The importance of raising cattle comes from the variety of produce they provide: main produce (cow milk, beef), secondary produce (skins, manure, unconventional energy); and by-products (blood, horns, nails, etc.).

Cattle produce 90% of the total amount of cow milk consumed on the globe, 33% of the total amount of meat, and 90% of the total amount of skins processed worldwide. In Romania, cattle represent 50% of the global animal production, ensuring 80% of the total amount of cow milk, 24% of the total meat production, 90% of the total skins production, and 70% of the total amount of animal manure [1,4].

Of all cattle productions, cow milk is the most important one due to its complex composition, to its biological value, and to its high digestibility. It contains about 100 substances necessary to the human body, all 20 amino acids in the optimum proportions, 10 fat acids, 25 vitamins, and 45 minerals [6,8]. The importance of cow milk consists not only in its particular nutritious value, but also in the fact that it can be turned into a very large number of dairy produce which contributes in a particular way to the diversification of man's nutrition [1,9].

Cow milk production in the cattle from dairy farms is influenced by a series of factors, such as factors that influence individual production and factors that influence total, delivered cow milk production. Since the cow milk production of each dairy cow varies, the factors that influence it can be grouped into factors with direct influence and factors with indirect influence [2,5,7].

Total production indicates the entire amount of cow milk produced daily on a dairy farm, and total cow milk production delivered is the amount of cow milk with 3% fat soled to specialised establishments.

MATERIAL AND METHOD

Because of the particular importance of cow milk in human nutrition, we decided to study the factors that influence cow milk production in cattle **both individually and overall, depending on the quality of the biological material and on the exploitation technology.**

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RESULTS AND DISCUSSION

Among **inner factors** that influence the amount and quality of cow milk are physiological type, breed, individuality, age, body development, body conformation and constitution, factors that can be controlled through methods of alteration of the genetic structure of the cattle breeds and populations.

Physiological type is characterised by a certain inner structure and a certain functional intensity of the organs and apparatuses; thus, we distinguish in cattle the respiratory type corresponding to the dairy cows, characteristic to high cow milk production dairy cows.

Each **breed** has a different genetic potential; though they belong to the same productive type, there are breeds that produce large amounts of cow milk such as the Frisian. Each breed has its plusvariated that produce several times the average cow milk production of the breed; in the same conditions, dairy cows from the same breed can produce lower cow milk productions though the genetic differences are between breeds and populations.

Cow milk production increases with the dairy cow **age** from the first to the fifth lactation, depending on breed precocity, on morpho-productive type, and on exploitation conditions.

There is a positive correlation between cow milk production and **weight**: each breed has an optimum body weight that favours cow milk production unless it goes above 650 kg.

Body conformation reflects the main production ability: there is a productive type for each morpho-physiological type.

Body constitution influences cow milk production since it conditions the body resistance to diseases: dairy cows with a robust constitution yield more.

There is a relationship between the animal's health state and cow milk production: diseased dairy cows produce less cow milk.

Of the factors influencing cow milk production, exploitation technology and feeding type influence individual cow milk production.

Feeding is one of the most important external factors influencing cow milk production, with negative effects in both over- and under-feeding.

They recommend, to feed dairy cows, succulent fodder (green fodder, root fodder, and brined fodder) in large amounts because they are easy to digest ensuring a higher feed consumption. Concentrated feed are necessary in dairy cows to produce larger amounts of cow milk.

The quality of feed in a ratio has a direct influence on the level of cow milk production. Feed quality refers to the nutrients they contain, to the harvesting type, to their preservation, and to their storage.

Preparing and administering feed leads to the improvement of the quality and of the digestibility, determining a higher consumption of fodder and increasing cow milk

production. The way fodder is administered, the order of administration, and the feeding times determine the development of strong conditioned reflexes and not observing them has a negative impact on cow milk production.

The more often dairy cows are watered, the more the cow milk production increases. Automatic water-suppliers and constant level water-suppliers are the most recommendable in dairy cows.

Farrowing season influences cow milk production particularly on dairy farms where feeding is not even during the year. Dairy cows that farrow in spring and summer produce larger amounts of cow milk in the first lactation months, which coincides with feeding based on green fodder that stimulated cow milk secretion.

Cow milking quickly and energetically, in an intense rhythm has a positive influence on cow milk production because we get the entire amount of cow milk secreted to that moment.

Dairy cow movement is important for cow milk production – in summer, they go to the grassland; in winter, they are walked through the paddock.

A mean cow milk production level can be changed from one year to another through the changing of the structure of the number of dairy cows, which can be done in practice through dairy cow reformation and transferring heifers to the basic herd; the main concern should be to ensure a higher potential cow milk production ability in the heifers moved to the basic herd than in the reformation of the dairy cows that are removed for ever from the herd.

The cow milk production delivered (marketed production) on a daily, monthly, and yearly basis by each dairy farm to the processing units is the main productive and economic objective. Among the conditions on which depends the marketed cow milk production are the total volume of cow milk, inner cow milk consumption, and amount of cow milk produced.

Total production volume has a direct influence on the amount of cow milk delivered: the increase of the total cow milk production also results in an increase of the cow milk delivered. To reduce inner cow milk consumption, we need to introduce concentrated feeds, hays, and succulents in as large amounts as possible and at the earliest age possible in the dairy cow nutrition and to reduce the amount of cow milk used to feed the calves.

At the same time, introducing cow milk substituents in the nutrition of the calves in parallel with the reduction of the amount of cow milk fed to the calves determine the increase of the amount of cow milk marketed.

Cow milk quality, i.e. the percentage of fat and proteins, influences directly the amount of cow milk marketed because it is recalculated based on the standard fat percentage; when the percentage of fat in the cow milk is above 3.5%, recalculating it results in an increase of the amount of cow milk delivered.

CONCLUSIONS

Cow milk production on dairy farms is influenced by a series of factors whose knowledge is extremely important since some of them have a negative impact on cow milk production; this is why we need to limit their action unlike other factors that have a positive impact on cow milk production and need to be stimulated.

The total amount of cow milk produced on each farm is determined by the mean production capacity of each lot of dairy cows, by the number of the dairy cows, by the reproduction level, by the lactation level, and by mammary rest of the dairy cows.

Mean production capacity of the dairy cow population has a direct influence on the total cow milk amount produced on a daily, monthly, or yearly basis on each dairy farm.

Improving the potential capacity of cow milk production can be done in the heifers through selection and matching.

The level of mean cow milk production is the daily mean cow milk production per dairy cow, hence the importance of valorising completely the production potential.

The **number of dairy cows** on a dairy farm influences total cow milk production, and increasing the number of dairy cows results in an increase of the total cow milk production. As a rule, we need to take into account that each dairy cow delivers a calf every year, lactates, and has a mammary rest to increase the total cow milk production on the dairy farm.

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