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The Role and Importance of the Feed Base in Dairy Farms and Little Households

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Abstract. *In the context of global climate change, it is possible to reduce CH4 gas by intensifying production and using resources efficiently. Also, in order to meet the growing needs of the population, increasing the volume of milk and dairy products, strengthening the feed base in livestock farming is one of the urgent issues. Also, in order to meet the growing needs of the population, increasing the volume of milk and dairy products, strengthening the feed base in livestock farming is one of the urgent issues. It should be noted that considering that 95% of the dairy products produced are consumed by households, one of the main objectives of the article is to study the processes of providing small-scale producers with feed and to develop scientifically based proposals.*

Key words: *Agricultural transformation, agricultural economy, market economy, livestock sector, medicine standard, feed base, feed and resource providing, average price of milk, lactation period, milk cost.*

As a result of the transformation of the economy and the introduction of market relations in agriculture, the impact of agriculture has been significant. In particular, the abolition of state orders in the livestock sector, as well as the introduction of production based on market demands, had a negative impact on the activities of large production complexes specializing in dairy farming. According to the analysis of research conducted in the field, according to the data provided in the scientific works of Russian researchers, during the planned economy period, an average of more than 300 kg of milk was produced per capita[1]. Considering that medical standards require 137-138 kg of milk per capita, this indicator is quite high. Also, we can see that currently the share of peasant farms in the volume of milk production in our republic is high, and the production structure in farms is high. Considering that, according to statistical data, almost 94 percent of the total number of cattle in our republic is owned by peasant farms, we can see that strengthening the feed base of these livestock and increasing milk production is significantly complicated.

Today, milk and dairy products play a significant role in providing the population with food products, as well as promoting a healthy lifestyle. At the same time, we can see that global milk production has increased by 35 percent in the last 10 years[2]. Such a sharp increase in production requires intensive use of production resources, as well as efficient use of land and water resources. Because, increasing the volume of product production requires expanding scientific research in the field, strengthening

[1] Стрекозов, Н.И. Научные основы повышения эффективности молочного скотоводства / Н.И. Стрекозов // Зоотехния. - 2002. - № 5. -С.2-5.

[2] Hemme, T. IFCN Dairy Report; International Farm Comparison Network, IFCN Dairy Research Center: Kiel, Germany, 2019.

livestock breeding and feed base. In livestock farming, several factors directly and indirectly affect the productivity of livestock, including the breed of livestock, the supply of feed resources, the composition of the feed base, and the geographical climate of the area where the livestock is located (Figure 1).

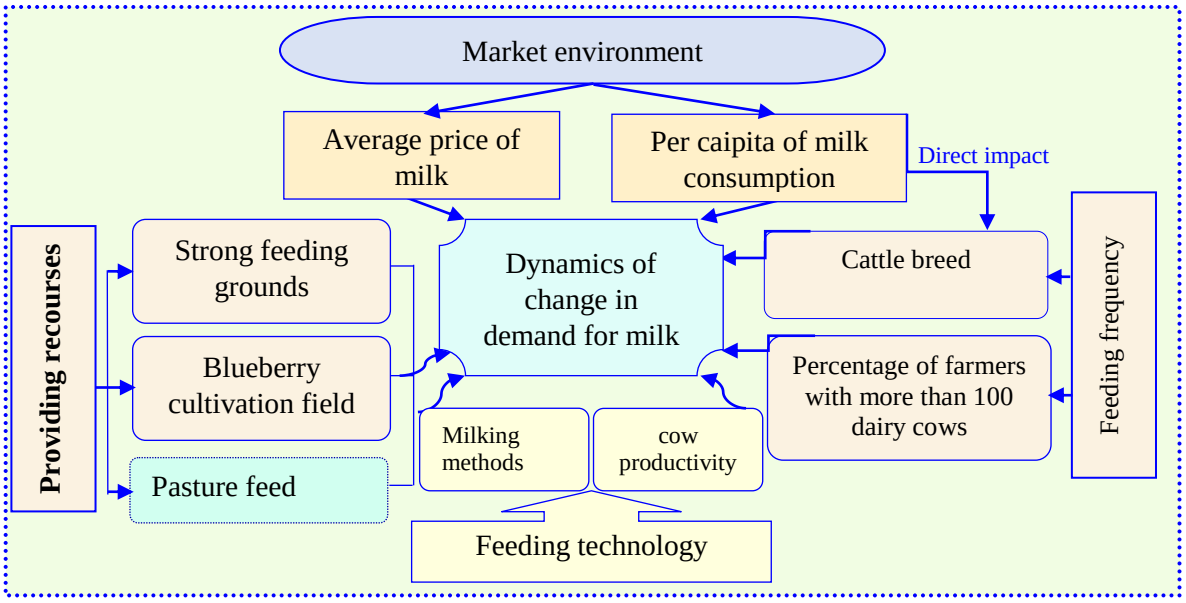

Figure 1. Factors affecting milk production.

So, from the picture we can see that the volume of milk production is primarily influenced by market demand, and then the factors are directly formed based on market demand. Also, in dairy cattle breeding, the feed ration should initially consist of strong nutrients, followed by green biomass and pasture feed. It should be remembered that the feed base, the breed of cattle, directly affects the productivity of livestock, that is, the volume of milk production, while milking technology and the number of dairy farmers with more than 100 dairy cows have an indirect effect.

We believe that farmers with more than 100 dairy cows will have a greater chance of benefiting from state preferences and subsidies. However, given that 95% of milk produced in our country is produced in households, the likelihood of using the government-provided benefits in milk production is quite low. Also, in order to increase productivity in dairy farming, the composition of the feed ration and the effect of each of its ingredients on livestock should be studied. Otherwise, a feed may increase milk production for a certain period but later be harmful to livestock. Therefore, it is advisable to allocate agricultural land to livestock farmers and peasant farms to strengthen their feed base, as well as to provide preferences in the supply of seeds and mineral resources for intensive feed production. According to analyses, feed accounts for about 65-70% of the cost of milk[3]. Other costs, on average, make up 30-35 percent. If the feed includes green mass, strong feed and hay, the cost of milk is formed depending on the market prices of the feed. Therefore, it is possible to increase the volume of milk production by forming a feed base in farmers' farms.

In fact, most dairy producers preferred to reduce the cost of milk by increasing milk yield, rather than by increasing feed rations[4]. Because factors such as milk yield, fat content, the amount of milk produced per cow per year, as well as reducing the cost of milk storage, directly reduce the cost of

[3] Hemme, T.; Alqaisi, O.A.; Ndambi, O.A.; Boelling, D. IFCN Contribution to the IDF/FAO/IFCN Joint Project, World Mapping of Animal Feeding Systems in the Dairy Sector; International Dairy Federation: Rome, Italy, 2014.

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milk. It should not be forgotten that the use of extensive methods in milk production primarily increases the volume of CH_4 gas emissions from livestock farms, which also negatively affects the environment, and the impact of ingredients added to feed rations to increase livestock productivity in the intensification of livestock complexes on CH_4 gas emissions has not been assessed. Therefore, in the future, it is appropriate to evaluate the effect of each element included in the feed ration on milk productivity, as well as the level of CH4 gas formation. At the same time, it has been scientifically studied that increasing milk productivity of cows through improved feed rations reduces the amount of CH4 gas emitted from them. It is worth noting that, given that today 95 percent of milk production in our republic is accounted for by dehkan farms, even short-term changes in feed prices have a dramatic impact on the cost of milk. Because farmers' farms do not have much opportunity to provide themselves with feed, have limited ability to store feed, and purchase feed only after selling the milk they produce, the composition of feed tends to change rapidly[5]. We can say that by improving the feed supply in dehkan farms, that is, by reducing the change in feed composition, on the one hand, it is possible to increase the milk productivity of livestock, and on the other hand, it is possible to sharply reduce the amount of CH_4 gas emitted from them. So today, the feed preparation base for dairy farmers can only include feed grown on their own farms and fortified feeds purchased from the market. This means that even a partial reduction in prices in feed markets will have a significant impact on the composition of the diet. That is, a change in the price of grain wheat leads to its replacement with corn or other grains, which not only affects the milk yield of livestock, but also leads to a change in the amount of carbon dioxide released into the environment. Accordingly, by properly organizing feed supply, that is, by establishing guaranteed feed markets for dehkan farms and stimulating the activities of feed ration consulting centers, we can increase milk production and improve its efficiency.

In our opinion, it is appropriate to give priority to the following products in improving the feed supply of dehkan farms, which have the largest share of milk production:

- granting preferences to feed producers (tax holidays, customs privileges);
- Establishing the activity of feed markets and supporting their logistics;
- Economic and social incentives for dairy farms (employment experience, subsidies (currently only for farmers));
- Introduction of artificial insemination of livestock and a system for keeping records of animals;
- organization of guaranteed services for dividing the lactation period into parts and developing a separate feed ration for each period;
- Calculate the relationship between feed costs and milk production volume using economic analysis and analyze the future changes in milk prices;
- Establishing consulting centers for formulating feed rations and providing guaranteed veterinary services.

Method and materials. In fact, it is important to determine the volume of milk production and analyze its relationship with feed supply. Because, in the context of global climate change, it is urgent to intensify feed production and supply, as well as to solve the problems of reducing the impact of feed on the volume of carbon dioxide. Today, the acceleration of urbanization processes creates the basis for an increase in the number of dehkan farms. This requires solving issues such as supplying dairy farms with feed and selling their products. 2 figure.

[5] Alqaisi, O.; Moares, L.; Ndambi, O.; Williams, R. Optimal dairy feed input selection under alternative feeds availability and relative prices. Inf. Process. Agric. **2019**, 6, 438–453. [CrossRef]

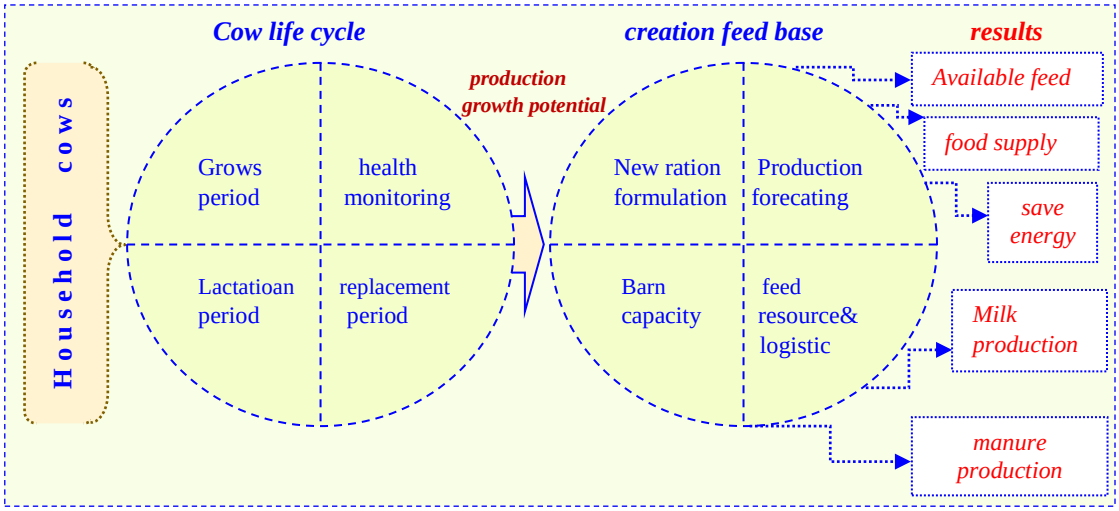

Figure 2. Providing livestock with feed and producing products in a household.

As can be seen from Figure 2, the processes of improving feed supply in organizing dairy production in households can be divided into 3 parts. 1) the life cycle of livestock, which takes into account the life span of cows raised for milk, the milking period, and veterinary requirements. 2) Strengthening the feed base, forming a feed ration based on the requirements of the breed and genetics of livestock and establishing a feed supply in accordance with the feed ration. It also includes processes such as forecasting future production volumes and taking into account the capacity of feed storage facilities in uncertain conditions. Depending on the capacity of feed storage facilities, it is possible to properly organize the supply chain in the future. 3) At the results stage, economic activity is assessed by analyzing the results of key economic indicators, such as the assessment of the available feed base, the amount of energy saved, and the amount of milk produced.

In fact, stochastic research of production and production forecasting in dehkan farms is a rather complicated process. Because most dehkan farms perceive livestock as a system for storing surplus financial resources. This is not seen as a development of production, but as an accumulation of surplus funds.

In conclusion, we can say that this study developed the following scientific proposals to study the impact of changes in feed ingredient prices and availability, feed ration composition, on milk productivity and ecology:

- Classification of dairy farmers specializing in milk production, namely, small, medium, and large farms based on the number of dairy cows;
- To assess the impact of state subsidies on the overall market situation in providing livestock farmers with resources. In this process, the impact of the benefits provided to farmers and the created conditions on the activities of dehkan farms, as well as their positive and negative aspects, should be analyzed;
- establish and encourage the activities of consulting centers to improve the feed supply of farmers, which accounts for a large share of total milk production;
- To establish statistics on the number of dairy cows by identifying the number of livestock owned by farmers. This will allow for the improvement of the breed of existing livestock by having the opportunity to maintain accurate statistics on the number of dairy cows, their breed, and the milk produced;
- To increase the possibilities of using econometric modeling methods in different feed supply situations to improve feed efficiency in milk production;
- Reducing the negative impact on the environment by monitoring the CH4 emissions of cows for months;

- such as creating a database on milk price fluctuations by reflecting monthly changes in feed prices and feed availability in local markets.

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