Features of the market infrastructure of environmentally safe milk

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Abstract. The relevance and novelty of the topic is explained by the increasing role of environmentally safe milk in providing the population with healthy food. The purpose of the work is to show certain features in the formation of the environmentally safe milk market infrastructure. Statistical materials on the work of the dairy market and the dairy industry of the Republic of Tatarstan were used to research the topic. Economic methods were used in the research process. As a result, the conclusions confirming the importance of the correct formation of the infrastructure of the market of environmentally safe milk are formulated. The market of environmentally safe milk of the Republic of Tatarstan has solid potential and good prospects for development, occupies an important place in the agro-food market, is a set of multidimensional organizational and economic relations that regulate the activities of economic entities linked to each other for the production, processing and sale of products. In the infrastructure of the market, special attention should be paid to reducing the cost of moving products from producer to processor and consumer, where nothing is added to the product except a price increase of 40 percent or more, which adversely affects the competitiveness of products.

1. Introduction
The infrastructure of the market for environmentally safe milk acts as an integrated structure with the interacting sectors of the dairy industry, dairies, trading systems, coordinating their actions with producers, processors and distributors of milk for the population.

In the infrastructure of the market for environmentally safe milk, the central link is the dairy cattle breeding, which supplies raw milk to the dairy industry and forms raw dairy zones. The dairy industry affects all the structure-forming sectors of the milk market. Reducing the production of raw milk directly affects the capacity utilization of the dairy processing industry, which leads to an increase in the cost of dairy products due to underutilization of equipment.

2. Environmentally safe milk: building the infrastructure
The infrastructure of the environmentally safe milk market includes: regulatory and legal acts on trade, marketing, consumer protection; sanitary requirements, shops and wholesale and retail bases; other forms in the form of auctions, exchanges and fairs; exhibitions; road transport organizations; warehouses; packing units; audit; consultants; risk insurers and lenders; informers from the centers; mass media and others.
The structure of the market for environmentally safe milk includes the means for delivering raw milk to dairies and delivering finished dairy products to consumers through trade enterprises, where the stage of the entire market mechanism ends. The infrastructure of the market for environmentally safe milk ensures the safety of dairy products, the systematic movement of it from producer to consumer.

The market infrastructure of environmentally sound milk cannot be considered as an auxiliary or secondary area. The emergence of the market for environmentally safe milk leads to the emergence of new organizations for the standardization and certification of milk. The main functions of the ecologically safe milk market infrastructure are: facilitating the fulfillment of their interests by the market participants; improving the performance of market entities based on the specialization of activities; training to improve the efficiency of operation of the market.

The infrastructure of the market for environmentally safe milk is a link between production and consumption of products, allows one to quickly resolve the temporary shortage of dairy products, information, service, and other services contribute to meeting the consumer demand.

The infrastructure of the market for environmentally safe milk ensures the functioning of the organizational, economic interconnections of market entities; regulation of the flow of milk and dairy products. The functions of the market infrastructure can be considered as direct assistance to milk producers, the development of the dairy industry.

The ecologically safe milk market infrastructure reflects a civilized service of existing market actors. Both public and private resellers interact on the market for environmentally safe milk, each of which has a special purpose and differences depending on the type of functions performed: make contracts for the supply of products, regulate the movement of dairy products and services, purchase and sale, and compliance with the operating mode.

The main products of the ecologically safe milk market are: labeled whole milk products, butter, canned milk, milk powder, cheese, ice cream, etc. The specificity of the ecologically safe milk market is that the perishable products imply fast primary processing of milk and bringing finished products to the consumers.

Dairy markets of ecologically safe milk are classified according to the following criteria: territorial, raw materials availability, and types of products. By specialization, markets for environmentally friendly milk are divided into the following: whole milk, butter, cheese, and butter-cheese.

In the Republic of Tatarstan, the market for environmentally safe milk develops with a predominance of contractual economic relations in a competitive environment with the participation of agricultural and processing enterprises, as well as the marketing system.

In the infrastructure of the market for environmentally safe milk, an important place is occupied by marketing, which contributes to the efficient operation of the entire system: from the production of raw milk and processing to the sale of products to the final consumer. In 2017, in the Republic of Tatarstan, the highest profitability was obtained when the cottage cheese was sold 412.6%, pasteurized drinking milk – 122.0%, and cheese – 106.0%. The production of cream and butter turned out to be unprofitable (Table 1).

The production of environmentally safe milk is more expensive compared to conventional products, which affects the formation of the market price of 1 liter of milk being at the level of 140-150 rubles, which is 2 times more expensive than all other conventional products. It is necessary to take into account the peculiarities of intermediary units ensuring standardization, certification and labeling of products, organizational, economic and technological aspects.

Producers of raw milk in the Republic of Tatarstan are oriented towards profit. The role of marketing structures that monitor the market is increasing, the range of dairy products is adjusted, which satisfies the preferred demand of the buyer of milk in terms of quality and price. In the infrastructure of the market for ecologically safe milk of the Republic of Tatarstan, the main suppliers of commercial milk are the major manufacturers.

Prices for environmentally friendly dairy products are higher compared to the prices of mass products produced using conventional technologies, since the costs of their production are higher. The
production of 1 kg of semi-soft cheese requires 9 liters of milk, 1 kg of hard cheeses – from 11 to 16 liters. Taking into account the norms of consumption of raw milk and its quality per 1 kg of cheese, the price is calculated at the level of up to 560 rubles for 1 kg.

Table 1. Financial and economic indicators of the sale of milk and the main types of dairy products of primary and industrial processing in the agro-industrial complex of the Republic of Tatarstan, 2017

| Indicators               | Sold products, centner | Total cost of prod-on, thousand rub. | Total cost of 1 kg, rub. | Proceeds from sales, thousand rub. | Price 1 c., rub. | Profitability % |
|--------------------------|------------------------|-------------------------------------|-------------------------|-----------------------------------|----------------|----------------|
| Pasteurized drinking milk| 21109.0                | 43361                               | 2054.15                 | 52893                             | 2505.71        | 122.0          |
| Cream                    | 155                    | 4112                                | 26529.03                | 1982                              | 12787.10       | 48.2           |
| Butter                   | 93.2                   | 3507                                | 37628.76                | 2904                              | 31158.80       | 82.8           |
| Ghee                     | 68                     | 3450                                | 50735.29                | 2652                              | 39000.00       | 76.9           |
| Cheese                   | 20.0                   | 831                                 | 41550.00                | 881                               | 44050.00       | 106.0          |
| Cottage cheese           | 579.0                  | 8111                                | 4008.64                 | 9577                              | 16540.59       | 412.6          |
| Other dairy products     | 1566.3                 | 11223                               | 7165.29                 | 10274                             | 6559.41        | 91.5           |

Source: compiled by the author according to the Ministry of Agriculture and Food of the Republic of Tatarstan.

The retail price of 1 kg of hard cheese aged in the climate chamber ranges from 800 to 900 rubles. For the production of 1 kg of the highest-grade butter, 20 to 40 liters of milk are consumed, depending on the fat content. The price of 1 kg of butter will be from 700 to 800 rubles. The cost of raw materials will be 280 rubles. And the cottage cheese will go to the trading network is not cheaper than 300 rubles. for 1 kg.

Table 2. The forecast of the economic efficiency of the production of environmentally friendly milk in the agricultural organizations of the Republic of Tatarstan.

| Name                              | Years | 2018 | 2019 | 2020 | 2025 | 2030 | 2030 in % by 2018 |
|-----------------------------------|-------|------|------|------|------|------|-------------------|
| Milk sold, thousand tons          |       | 1241.9 | 1300.0 | 1365.4 | 1408.7 | 1462.6 | 118               |
| The cost of 1 centner, rub.       |       | 1666 | 1724 | 1784 | 1846 | 1910 | 115               |
| Selling price 1 centner, rub.     |       | 2041 | 2122 | 2207 | 2295 | 2387 | 117               |
| Profitability, %                  |       | 22.5 | 23.1 | 23.7 | 24.3 | 25.0 | 2.5pp             |

Ecologically safe milk (certified and labeled)

| Name                              |       | 2018 | 2019 | 2020 | 2025 | 2030 | 2030 in % by 2018 |
|-----------------------------------|-------|------|------|------|------|------|-------------------|
| The cost of 1 centner, rub.       |       | 1999 | 2069 | 2140 | 2215 | 2292 | 115               |
| Sales price in eco-shops, rub.    |       | 3061 | 3183 | 3310 | 3443 | 3580 | 117               |
| Profitability, %                  |       | 53   | 54   | 55   | 55   | 56   | 3 pp              |
| Excess of the price of 1 centner of milk in eco-stores over the price in network trade, rub. | | 1020 | 1061 | 1103 | 1148 | 1193 | 117               |

Source: Author’s calculations according to the Ministry of Agriculture and Food of the Republic of Tatarstan.
In the retail distribution network, the price of 1 liter of ecologically safe milk, depending on the fat content, is 120-140 rubles, sour cream (20%) – 540 rubles, butter (82%) – 800 rubles, cottage cheese (5%) – 600 rubles. These prices are calculated taking into account the cost of production.

The Republic of Tatarstan, as well as Russia as a whole, lags behind the economically developed countries in the production of environmentally friendly products, their share in food consumed is about 0.1%. The price of a unit of organic dairy products is based on the cost of resources for production, the cost of which determines the higher price. When growing fodder crops without the use of mineral fertilizers, the yield is reduced, while the cost per unit of feed and the final price of feed increase. All this must be considered when developing the market for environmentally friendly milk. Using the data from the program for the development of the dairy industry, we calculated the forecast of the economic efficiency of milk production in the agricultural organizations of the Republic of Tatarstan (Table 2).

According to our calculations, the production of environmentally safe milk in the Republic of Tatarstan will increase the profitability of the dairy industry. Today, the share of domestic ecologically safe products in the retail networks of the Republic of Tatarstan is insignificant; its certification and labeling are not organized. The resource potential of the region allows to ensure the growth of production of environmentally safe milk and dairy products, to organize its supply both to the regional market, and to the all-Russian and international markets. A special place in the development of the infrastructure of the market for environmentally sound milk is the quality of the road network, provision of producers of raw milk by motor vehicles, tax incentives, timely receipt of loans.

Tax and customs organizations and state inspections cannot be assigned to the market infrastructure, since they perform coercive, controlling, and inspecting functions as state market regulators.

The main prerequisite for the normal operation of the milk market is the improvement of innovative work, the harmonization of economic parameters of activities: profit, prices, demand for products and offers, export and import of products, identification of priorities, capital investments, adaptation to market demands.

Peculiarities of the promising work of the ecologically safe milk market include emerging innovations in the intellectual saturation of management activities, the generation of new ideas, the growth of professionalism and the improvement of scientific literacy of personnel that form the basis for sound management, high-quality management, development of promising and progressive technologies and quality services. Separate consultations are short-term, sometimes medium-term, but it is very important to see the perspective and know the forecasts and strategy for the development of ecologically safe milk.

The optimally formed infrastructure of a civilized market of ecologically safe milk presupposes the availability of material and labor resources of appropriate qualification, auxiliary services and economic entities, ensuring a balanced functioning of its parts and contributing to the development of production.

The market infrastructure accumulates a set of systems of enterprises that study the state of affairs in the market from producers, processors, and distributors of milk and its products. A special place among marketers engages in advertising that drives commerce.

Effectively established advertising provides market participants with information for market orientation. Based on the information received, the partners determine the strategy of their behavior in the system of relations in the dairy market, developing specialized services focused on counseling.

The infrastructure of the dairy market in the Republic of Tatarstan acts as one of the promising segments of the agri-food market. Its main goal is the organization of effective activities of all partners of the dairy market in conjunction with various segments. The infrastructure of the dairy market through a system of relations coordinates the processes taking place and coordinates the production, marketing, and consumption of milk and its processed products.

In the infrastructure of the dairy market of the Republic of Tatarstan, a significant proportion of dairy products are produced and supplied by the dairy industry. Despite the fact that many milk
processing enterprises in the region have been privatized, their relationship with milk producers has remained.

Milk raw materials producers are interested in selling their products at a more expensive price. Dairy factories have the interest in buying raw materials cheaper in order to get more profit; in turn, they want to sell their products with greater profit for the whole team. The population, in turn, wants to buy dairy products at an affordable price and of high quality.

In developing the prospects for the development of local and regional markets for environmentally safe milk, many factors must be taken into consideration, which includes the following: economic, legislative, environmental, demographic, innovation, and others; ensuring the effective interaction of all participants in the production process and providing the population with environmentally-quality milk and its processed products; making possible that the optimum amount of profit is obtained for themselves. Inflated prices for ecologically safe milk with low solvency of the population reduce consumer demand, which leads to a narrowing of the market segment.

Milk processing enterprises in the Republic of Tatarstan produce and deliver milk and its products in a wide range to the regional dairy market. In recent years, there is a tendency to increase the demand and consumption of an expanded range of cheeses and dairy products, to reduce the proportion in the consumption of drinking milk and butter. A strategic producer of milk for filling the market with environmentally safe products is the dairy cattle breeding of large dairy farms and dairy complexes with a high level of mechanization and automation of production [11].

In the Republic of Tatarstan, the vast majority of dairy products in the distribution network in a wide range of supply enterprises of the dairy industry, which from 2012 to 2016 increased the production of dairy products, which consumers enjoy high demand, the range of which can be divided into the following groups:

- Products of liquid and semi-liquid consistency (kefir, yogurt);
- Products with a high level of fat (sour cream);
- Products with a high protein composition (cottage cheese);
- Products of lactic fermentation with the formation of lactic acid, which increases their digestibility compared with milk (cottage cheese, sour cream, sour milk, and others);
- Products of mixed fermentation of high digestibility, in which, in addition to lactic acid, there are alcohol, carbon dioxide and volatile acids (kefir, ryazhenka, acidophilus, ayran, koumissm and others).

3. Conclusion
The main directions in the development of the infrastructure of the market for environmentally safe milk are the following: (a) creating the guaranteed commodity resources; (b) improving the state regulation of the market by forming the necessary legal framework regulating the standardization, certification, and labeling of dairy products for environmental cleanliness; (c) developing a target program for the development of the ecologically safe milk market; (d) adjusting the existing infrastructure of the dairy market by adding the necessary units for certification and labeling of milk and dairy products for ecological purity.

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