

THE MECHANISM OF DEVELOPMENT OF ECOLOGICAL POTENTIAL OF THE DAIRY INDUSTRY TAKING INTO ACCOUNT NATIONAL PRIORITIES

Summary

In this article a development of potential of the dairy industry in Belarus, taking into account the national priorities and world tendencies is considered, the directions of development of dairy branch in a context of questions of expansion of ecological manufacture, a net production are analyzed. Inquiry of the given question is connected to the priority directions of innovative activity in the area of ecology which are expected for 2006-2010 for Belarus: maintenance of advancing development of scientific researches about ecological bases of a sustainable development, revealing of new ecological risks, perfection of scientific bases of is standard-legal base, the economic mechanism, providing transition to ecological compatible wildlife management.

Алексей Викторович МЕЛЕЩЕНЯ, Мария Леонидовна КЛИМОВА
РУП "Институт мясо-молочной промышленности", г. Минск, Республика Беларусь
e-mail: Klimovaml@tut.by

МЕХАНИЗМ РАЗВИТИЯ ЭКОЛОГИЧЕСКОГО ПОТЕНЦИАЛА МОЛОЧНОЙ ПРОМЫШЛЕННОСТИ С УЧЕТОМ НАЦИОНАЛЬНЫХ ПРИОРИТЕТОВ

Резюме

В данной статье рассмотрено развитие потенциала молочной промышленности Беларуси с учетом национальных приоритетов и мировых тенденций, рассмотрены направления развития молочной отрасли в контексте вопросов расширения производства экологически чистой продукции. Исследование данного вопроса связано с тем, что приоритетными направлениями инновационной деятельности в области экологии на 2006-2010 гг. для Беларуси являются: обеспечение опережающего развития научных исследований об экологических основах устойчивого развития, выявление новых экологических рисков, совершенствование научных основ нормативно-правовой базы, экономического механизма, обеспечивающих переход к экологическому совместимому природопользованию.

1. Introduction

As the academician National Academy of sciences of Belarus, Dr. of Economics P.G. Nikitenko confirms: "transition to the socially-focused market innovative economy assuming a combination and harmonization of mechanisms of market, state and public regulation of social and economic, economic-ecological processes becomes a basis of the Belarus statehood" [1].

Belarus has developed enough dairy branch. According to problems of increase of competitiveness of made production within the limits of realization of the Government program of revival and village development for 2005-2010 great volume of works on technical re-equipment milk of the processing enterprises modern energy has been executed by the saving up equipment that has allowed the enterprises to introduce quality systems according to requirements ISO 9001 and HACCP.

At present in agriculture sphere there is a stable gain of volumes of manufacture of milk, the internal requirement for milk and dairy products is completely satisfied; besides, more than 60 % of dairy production are exported on foreign markets. Thus, having achieved stable increase in quantity, there was a moment when substantially it is necessary to reconsider earlier generated approaches to quality of let out production for the purpose of development of the market of ecologically pure products.

Taking into account growth of manufacture of milk in republic, saturation of home market by dairy production deeper measures which quality and safety maintenance not only from the moment of reception of a dairy product on manufacture would concern, but also receptions of dairy raw materials are necessary also.

Belarus has approached to that level when it is possible to pass from a stage of increase in output for satisfaction of growing requirements to a stage of improvement of quality of production at increasing requirements to ecological cleanliness of raw materials, technological processes and to consumption end-products.

In this article we consider perfection of ecological system of potential of Belarus taking into account national priorities and world tendencies.

It is necessary to notice, that priority directions of innovative activity in the field of ecology for 2006-2010 for Belarus are: maintenance of advancing development of scientific researches about ecological bases of a sustainable development, revealing of new ecological risks, perfection of scientific bases of is standard-legal base, the economic mechanism, providing transition to ecologically compatible wildlife management.

Let's allocate a number of the problems which decision is assumed by the given directions with reference to dairy branch:

a) in the field of rational use and protection of ground resources:

- ecology of agrarian and industrial complex and ecological perfection of the territorial organization of agro landscapes with maintenance of economically rational use of farmlands,

b) in the field of preservation and protection of biological resources and a biodiversity:

- formation of the new economic and financial mechanism founded on a combination of economic management methods by agriculture, considering processing bioresearches of branch,

c) in sphere of conducting industrial activity and use of production wastes and consumption:

- working out and application of legal, organizational and economic measures and the technologies conducting to minimization of volumes of formation of a waste, to expansion of possibilities of their processing and use,

- working out and introduction of technologies ecologically effective and saving up resources, manufactures, kinds of raw materials, production,

- development and introduction of national system of monitoring and forecasting of a condition of environment, the account and the reporting on the basis of information technologies for the purpose of increase of efficiency of the government in the field of wildlife management and preservation of the environment.

Thus, aspects of ecological development are closely interconnected with the economic. At the same time, considering conditions of a stable gain of volumes of manufacture of milk in Belarus and tehniko-technological reequipment and modernization by the modern equipment milk of processing factories, is required a number of measures on development in a direction of ecological manufacture and use of secondary dairy resources. Thus, the ecological imperative of national priorities of a sustainable development of Belarus demands following target criteria: 1 - purposeful working out and functioning of ecological agrarian manufacture, 2 - introduction in a process industry of such technologies, whether which do harm to environment, including for the account of deep processing of secondary resources.

The main vector of the *first target criterion* is guided by stimulation of development of concrete sectors of economy, its manufactures. In this case priorities are developed in the form of so-called branch programs or projects.

There are two reasons of that the special attention to an ecological way of manufacture today is paid. First, it is an ecology problem as a whole, including agrarian sphere and a problem of quality of products. In the modern world of a problem of protection of environment leave on the foreground. Paramount value fast reception of high crops, yields of milk and short-term profit, and protection of the earth, water, air, plants and animals has not, the person. The ecological factor becomes one of the cores at acceptance of economic decisions both at regional and state levels, and in scales of all planet.

The industrial approach to development of system conducting agriculture promoted essential escalating of manufacture of agricultural production. A by-effect of such practice was pollution of soil, water and a foodstuff pesticides, nitrates and other harmful substances which in aggregate negatively affects on health of the person. The numerous facts of the negative consequences caused by aspiration to reception of higher rate of return, stimulated interest to ecological agriculture which name also biological, organic, biodynamic, alternative and so on.

The term "ecological production" (or "ecologically a net production") sees the optimal, that is the clear and clear consumer for perception and the manufacturer. Requirements to ecological agriculture include questions of observance of ecological norms of cleanliness not only products, but also environment. The ecological agriculture provides a steady condition of ecological system which is pledge of a sustainable development of economic and social sphere.

The market of ecological production promptly and steadily grows in the world. Feature of the given segment of the market is its stably high growth - from 10 to 20 percent a year, and the price of this foodstuff exceeds the price usual on the average on 30-40%.

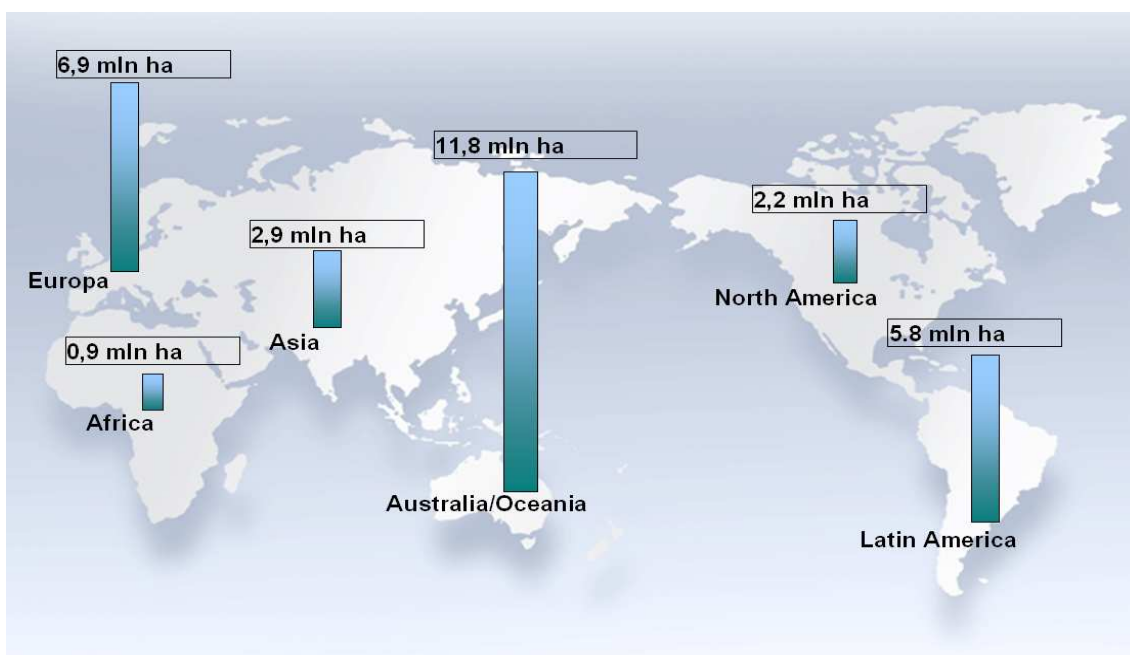


Fig. 1. Organic agriculture worldwide

Source: SOEL-FiBL Survey 2007 [3]

Characteristic indicator of development of organic agriculture is the size of the areas of the earths on which organic cultures are grown up.

Organic agriculture has been rapidly growing for over a decade and information on certified organic agriculture production and trade is now available for 138 countries. Certified organic areas included 32 million hectares in 2007 - one third of which being arable land and permanent crops, and two-third being permanent pastures and grasslands - as well as 33 million hectares of land certified for organic wild collections. Global demand for organic food, fibers and medicinal and cosmetic products remains robust, with sales increasing by over five billion US \$ a year. International sales of organic products were 46,1 billion US \$ in 2007, doubling those of 2002 [2].

In total, Oceania holds 39 percent of the world's organic land, followed by Europe (23 percent) and Latin America (19 percent). Currently, the countries with the greatest organic areas are Australia (11,8 million hectares), Argentina (3,1 million hectares), China (2.3 million hectares) and the US (1,6 million hectares). The number of farms and the proportion of organically compared to conventionally managed land, however, is highest in Europe [3].

There has been major growth of organic land in North America and in Europe; both continents have, compared to the end 2004, half a million hectares more each. In North America, this constitutes an increase of almost 30 percent, representing an exceptional growth. In most countries organic farming is on the rise; there have, however also been decreases of organic land (extensive pastoral land) in China, Chile and Australia.

Table 1. Organic land and farms by continent

Continent	Organic land area [hectares]	Share of total agricultural	Organic farms
Africa	890504	0.11%	124805
Asia	2893572	0.21%	129927
Europe	6920462	1.38%	187697
Latin America	5809320	0.93%	176710
North America	2199225	0.56%	12063
Oceania	11845100	2.59%	2689
Total	30558183	0.74%	633891

Source: SOEL-FiBL Survey 2007 [3]

2. Market

Global sales of organic food and drink have increased by 43,5 percent from 23 billion USD (17,8 billion €) in 2002 with sales reaching 33 billion USD (25,5 billion €) in 2005. Organic Monitor expects sales to have approached 40 billion USD (30,9 billion €) in 2006. Although organic agriculture is now present in most parts of the globe, demand remains concentrated in Europe and North America. The two regions are experiencing undersupply because production is not meeting demand.

The revision process of EU regulation 2092/91 on organic agriculture, however, received the most international attention in 2006.

Currently more than 60 countries have a regulation. Certification AND Accreditation Today, 395 organizations worldwide offer organic certification services. Most

certification bodies are in Europe (160), followed by Asia (93) and North America (80). The countries with the most certification bodies are the US, Japan, China and Germany. Many of the certification organizations also operate outside of their home country. 40 percent of the certification bodies are approved by the European Union, 32 percent have ISO 65 accreditation, and 28 percent are accredited under the US National Organic Program.

Lacking acceptance and recognition between the different certification and accreditation systems can contradict the objective of enhancing trade, market development and fostering confidence. An important initiative for international harmonization is the world federation of movements for ecological agriculture (IFOAM), Accreditation Program, which assesses certification bodies against the IFOAM norms. Currently 32 certification bodies operating in over 70 countries around the world have voluntarily submitted themselves to the IFOAM accreditation process.

It is supposed, that the cost price of Belarus ecological production will be below cost similar production in the Western Europe owing to richer soil potential, presence of the areas of the earths which recently are not processed in connection with economic difficulties, cheaper labors. Thereupon at lower expenses at production good possibility of its export is created. Despite an overabundance of agricultural products in the EU countries, their requirement for ecologically pure products is satisfied only on third, thus demand for such products grows advancing rates. Therefore Belarus has prospects to occupy the niche in deliveries ecologically a net production.

Ecological foodstuff, ecological wood, ecological textiles - such market is focused, first of all, on the consumer, caring about the health. The separate market are products for a children's and dietary food where especially rigid demands are made to quality. The ecological market offers the better goods and at the same time guarantees to the manufacturer higher prices of realization and relative independence. Occurrence and cleanliness of such market are impossible without standards of ecological manufacture and the independent accredited system of certification.

Base requirements to an ecological agricultural production have been developed by the World federation of movements for ecological agriculture (IFOAM), and subsequently are accurately established by EU law № 2092/91. As a whole the certification system includes standards (rules, requirements), inspection (check of performance of the shown requirements) and certification (a positive estimation) received production.

In the USA for 2005 it has been certificated by a sign on organic quality of 87082 goals of dairy cows [4]

In front of Belarus there is a problem of creation of the Belarus standard base of system of certification harmonized with the standard international requirements and marks in the field of ecological agriculture and further a recognition its international trading partners. Only it will provide to the Belarus goods overcoming of technical barriers at export operations according to WTO requirements. Coordination council creation on ecological agriculture which will include the large organizations, ecology prosecuting by subjects and preservations of the environment, ecological agriculture in particular is necessary.

It is necessary to carry out working out of special technical regulations "Requirements to organic methods of manufacture, processing, packing, transportation, a turn of agricultural production and to its marks". It will give the chance to generate the market of ecological products.

The system of certification of food and agricultural production in Belarus has been focused until recently on an end-product, instead of on process, a way of manufacture. Creating similar system of certification, we risk to close the market in the country. We will assert, that at us a qualitative, natural product, but with it we will not enter the foreign market, without transition to system of the international accreditation and certification.

Production control at all stages of its production cycle, including certification of soil, the seed and landing material, the process of manufacture, an end-product, its processing, and also certification of the processing enterprises is necessary and important. So the transparency of manufacture of ecological production, possibility of the control of all chain from the manufacturer to the consumer is provided to guarantee to the buyer quality of a product.

In process of market development there is a necessity of creation of the Union of manufacturers and suppliers ecologically a net production protection and lobbying of interests of manufacturers of ecological production should become which basic function. The union should be engaged in consulting, trade mark creation, a brand of a sign on conformity, maintenance of its image, advertising, and also to assist manufacturers in the organized and competent sale of production, both in home market, and for export.

At an initial stage of formation of the ecological market of milk in Belarus, it is offered to enter certain minimum procurement prices which will differ from the minimum procurement prices of traditional milk.

The base formula for calculation with suppliers for ecological milk is offered following:

$$S_e = S_{\min} \cdot K_p, \quad (1),$$

where

S_e - level of the minimum procurement prices of 1 ton of ecological milk taking into account fertility of ground grounds, thousand rbl.

S_{\min} - level of the minimum procurement prices of 1 ton of traditional milk, thousand rbl.

K_p - the correction factor considering a parity of level of consumer properties of the ecological goods to traditional. According to an expert estimation for Belarus in a present situation it makes 1,9.

Further at change of regulation of ground relations in the base formula is admissible to consider other indicators and factors, as for example the factor considering change of the investment income at a deviation of a point of agricultural grounds from average value on republic.

For development of the market of organic milk it is offered to carry out measures under the statement of a grade of milk "bio", to definition of criteria of manufacture and requirements to this grade.

Certainly, that reception of ecologically safe food raw materials and manufacture of a safe foodstuff demands additional material inputs. Therefore except direct mechanisms of financial support indirect methods of stimulation of innovative activity in sphere of ecological

agrarian manufacture in the form of granting of system of privileges and discounts, inclusion in the Government program of development of agriculture according to which financial support of formation and development of ecological economy will be carried out should be used actively.

Further it is necessary to create Fund of support of the ecological agricultural sector which financial assets will be distributed taking into account a kind of made production on hectare of the area occupied under this activity. It is necessary to distribute the given financial assets taking into account that the period of formation of the managing subject for the purpose of certificate and conformity reception to all parameters of ecological manufacture makes not less than 3 years, during for managing subjects financing should be above.

The share of the state participation in expenses should be defined by an economy level of development. The it above, the more considerably the contribution to financing of ecological manufacture.

Distinctive feature of the second target criterion is its close interrelation with technological development of the industry and possibility to carry out deep processing of dairy raw materials.

With the account of active development of manufacture of cheese in Belarus, whey processing has a special urgency.

The problem of full and rational use of dairy whey is caused by its considerable volumes, high power consumption of processing, deficiency of capacities on industrial processing of whey and ecological factors.

Dairy whey on the structure, biological and food value is valuable raw materials from which it is possible to make the wide nomenclature of food and fodder products. The volume of whey made in the world in 2006 made about 165 million t, in Byelorussia of 1,8 million tons. Last data in the field of processing of dairy whey show, that the market of foodstuff from whey in the world steadily grows. In 2006 - 59% of whey went for industrial processing, and the further growth of this share, and 41% - on forages, fertilizers, a waste is predicted.

The total amount of world production of various products from dairy whey (including lactose, dry whey, a filtrate, WPC and various fractions) makes almost 4 million tons. Including dry whey in the world it is made more than 2,3 million tons a year. Manufacture of dry whey in EU (15 countries) has made 1,6 million tons, including in France - 0,6, Germany - 0,3 million tons, and in the USA - 0,5 million tons. Experience of these countries has shown advantage of processing of dairy whey in other products.

In Byelorussia according to the Program of processing of dairy whey accepted in September, 2008 and manufactures of dry dairy products in Byelorussia for 2008-2010, many enterprises have started to carry out work on creation of necessary capacities.

Absence of processing of whey can lead to serious ecological consequences. After all in whey organic substances capable to oxidation contain many: fibers, fats, carbohydrates. The biological requirement for oxygen (an integrated indicator which is estimated usually at an estimation of impurity of sewage of the industry, especially food manufactures) 1 l of whey averages 50 g/liter It in 150 times above, than

biological requirement for oxygen of household drains.

Thereupon, the organization of industrial processing of dairy whey is especially actual. It will allow the processing organizations to provide complex processing of milk, to raise economic efficiency of manufacture as a whole at the expense of reception of additional profit on realization of products from dairy whey and decrease in expenses on sewage treatment; to solve problems of increase in resources of biologically high-grade foodstuff, medical preparations, fodder concentrates; to exclude environmental contamination by milk components, to carry out integration of a national economy into the world market.

3. Conclusions

In summary it would be desirable to notice, that now Belarus, making use of positive world experience, can develop such perspective direction as ecological manufacture of milk and dairy production that will positively affect competitiveness of the dairy industry, both in ecological, and in the social and economic plan. It will allow strengthening positions in the world dairy market, to

give a considerable impulse to development not only agriculture and a process industry of our country, but also other branches.

4. Literature

- [1] Neosfernaja economy and social policy: strategy of innovative development / of P.G. Nikitenko. - Minsk: the Belarus science, 2006 - 479 p.
- [2] Committee on agriculture. Twenty-first Session Rome, 22-25 April 2009 Public-private partnership for enhancing organic agriculture trade – a report of the Interdepartmental Working Group On Organic Agriculture.
- [3] The World of Organic Agriculture. Statistics and Emerging Trends 2007. 9th edition, totally revised and updated. / International Federation of Organic Agriculture Movements IFOAM, Bonn, Germany & Research Institute of Organic Agriculture FiBL, Switzerland. 2007.
- [4] USDA, Economic Research Service, based on information from USDA-accredited State and private organic certifiers.