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Systems Of Management And Tendency Of Development Of Organic Dairy Cattle Breeding In The World And Kazakhstan

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ABSTRACT
At the developing in Kazakhstan of system of normative and technical providing organic agricultural production, it is necessary to be guided by standard regulation of the world market which in this sphere is carried out by the international standards and recommendations. Appearance in the market of Kazakhstan of production of organic production, the increasing interest in organic production of domestic producers, the entry of the Republic of Kazakhstan into the World Trade Organization (WTO) proves need of activization of work on standardization for this segment of the consumer market of Kazakhstan, and also on representation and protection of interests of the country at the developing of the international standards.

Keywords: organic agricultural production, production, principles, bioproducts, animal, dairy products, certification, standards.

INTRODUCTION

According to the Kazakh Federation of the movement of organic agriculture (KAZFOAM) the area of the lands certified as organic, now makes 43 million of hectares in the world. Certified organic production is made in 170 countries. There are two million producers of organic production in the world. The market size of "organics" makes 72 billion dollars, and by 2020, according to forecasts of International Federation of Organic Agriculture Movements (IFOAM) can reach $200-250 billion. The legislative norms, regulating organic agriculture, exist in 88 countries of the world, including in the CIS countries: Georgia, Tajikistan, Ukraine, Moldova, Azerbaijan.

Short historical background

The organic agriculture began to be formed at the beginning of the XX century as the concept of biodynamic agriculture which is put forefront by Rudolf Steiner in 1924. Later it was called as "organic agriculture". For the first time the concept of this term was presented by the expert in agriculture of the Oxford University Lord Nortbor in the book published in the 1940th "Care of the Earth"[1].

The British botanist Albert Howard was the first of founders of organic agriculture. His book "Agricultural Precept", which was published in the same 1940th, was made huge impact on many scientists and farmers. Howard described negative influence of chemical fertilizers on health of animals and plants and offered the system of fertilizer of soils which is based on use of composts from the vegetable remains and manure.

Organic agriculture – is not only one of methods of production of food stuff. It is an alternative to current intensive agriculture which in the near-term outlook won't be able to exist. The global ecosystem can't sustain the increasing loading. The organic agriculture corresponds to natural cycles.

The organic agriculture is a practical realization of the principle of the sustainable development in agrarian area, uniting and harmonizing developments of ecological, economic and social spheres of society [2].

According to the standard of the European Union, the terms "ecological", "biological" and "organic" agriculture are practically synonyms. IFOAM uses the term "organic farming" or "organic agriculture", in translations into Russian of official documents of this organization. It is translated as "organic agriculture". And more often the term "ecological agriculture" use in publications in Russian.

The organic agriculture sharply reduces an external contribution by means of natural ways and substances according to both traditional, and to modern scientific knowledge, increasing both agricultural efficiency and resistance to diseases. The organic agriculture follows the principles, accepted around the world, which are applied in local social and economic, climatic and cultural conditions. As follows from this, IFOAM pays much attention and support the development of the self-supporting systems at the local and regional levels.

The organic agriculture is based on the accurate statutory principles. Since January 1, 2009 in all territory of the EU came into force of change of Organic Resolutions №834/2007 and 889/2008. These resolutions include the provisions concerning all producers of biologically clear and organic food [3]. For observance of these principles at least once a year by government, independent authorized inspectors carry out inspections of organic farms, farmers, processors and organic product traders [4].

Quality control in production begins directly with the land. The lands which are given for organic cultures **have to be processed not less three years without use of chemical fertilizers**. Only the healthy soil gives a good harvest, and also immunity to plants for pest control. Seeds for organic farm have to be adapted for local conditions, are steady against plant pests and weeds and, **the main thing not to be genetically modified**. Fertility of soils has to be maintained by means of a various crop rotation and biologically split fertilizers of exclusively microbiological, vegetable or animal origin.

It is strictly forbidden the use of artificial fertilizers - toxic chemicals (herbicides and pesticides) of genetically modified components, mineral fertilizers in the process of cultivation as the agricultural chemistry practically is "not utilized" by the nature.

Cultivation of organic-products, bioproducts is carried out only by traditional methods. Many types of agricultural methods are carried out manually for not to do harm to plants and the soil.

Physical barriers, noise, ultrasound, light, traps or special temperature condition have to be applied to pest control. Birds help to struggle with insect pests and for them it is built the special nesting boxes.

Animals on ecofarms take necessary care, contain as much as possible approximately to their natural environment of life. Such animals are fed without containing chemical and synthetic additives, hormones and the genetic changed organisms. At the breeding of cattle, poultry or fish it is forbidden to apply antibiotics and growth hormones. Farmers have to fill in all information in registration forms when it is necessary to treat of the animals with antibiotics.

Use of radiation and genetic engineering in production of organic products also is most strictly forbidden. If the product is designated as "organic", its producer is obliged to use 100% of organic ingredients [5].

THE MAIN PART

World development of organic dairy cattle breeding

The world market of organic milk prolongs the development and increases every year. So, over the last 5 years the average annual increase is made 3,7%. The main demand for organic milk is concentrated in EU countries and the USA. Following the results of last year, the world market of organic milk and dairy products is estimated at $7,7 billion that it is made 11% of all world market of organic food.

The greatest the market in the world of organic milk and dairy products is Europe (50% of world), which for several years shows the convincing growth of volumes of consumption of organic products.

Production of organic milk in EU is conducted on farms which passed certification and meet the requirements of organic agriculture. Organic certification differs from obligatory certification of products, and originally it isn't limited to control of the final product, but includes monitoring of land grounds and all process of production and processing.

Production of organic milk in EU is concentrated in the countries where the greatest number of a livestock of cows for this production: Germany, Austria, France, Denmark, Great Britain. If to consider the quotient from a livestock of cows for gross production of organic milk in the total number of a livestock of cows, it is necessary to present the following leaders: Austria (18%), Sweden (12,7%), Denmark (10,9%), Great Britain (8,1%). Together with it, the per cent (%) of organic milk in total a gross yield of milk for the period 2013-2014 was made: Germany – 20%, France – 32%, Denmark – 25%, Greece – 18% (fig.) [6].

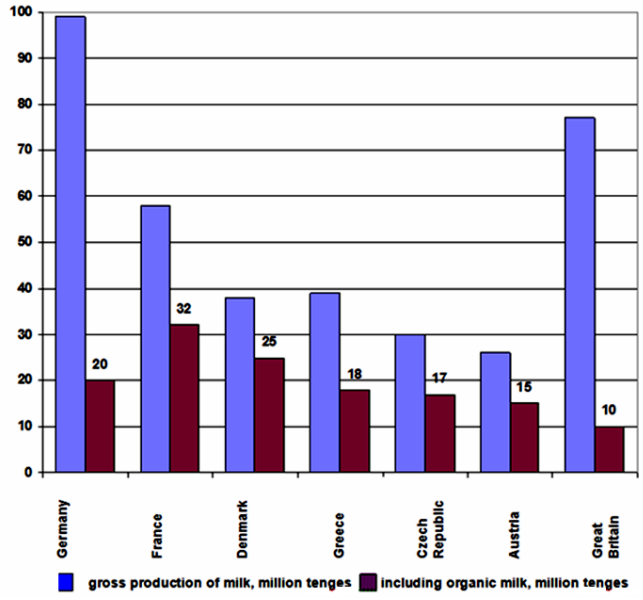

Figure 1 - A percentage ratio in production of organic milk and a gross yield of milk in EU countries, June 2013-2014

In 2013 significant increase in the market of organic milk recorded in Great Britain – 9,8%. It is about 50% ratio of demand in the market of organic dairy products of Great Britain has drinking milk, there is close to one-third of demand – on yogurts and cheese. If in 2013 the prices of organic and usual milk were changed according to the identical scenario but in 2014 the situation had been changed. The prices of usual milk were considerably reduced in comparison with the prices on organic and it was negatively designated on a financial condition of many farmers who were not related to production of organic milk.

For the period 2007-2012 the largest market of organic milk there were resistant growth rates with prospect of preservation of this increase for a long-term period. The most intensive growth of the market of organic milk was observed in France-12%. It was reached by means of support from the Government of the European countries.

The majority countries – the Members of EU developed the national plans of action in this branch. In particular, the policy of government procurements of organic milk on the acceptable conditions was developed on support of dairy branch of organic sector in many European countries.

Providing of information and technological support well influences on the development of organic agriculture in EU. So, in 2008 it was begun the large-scale information company during which there was created the Technological platform for support of scientific researches in the field of organic agriculture.

Kazakh realities of development of the organic market, in particular the dairy

According to the Kazakh Federation of the movement of organic agriculture in the country now there are 300 thousand hectares of the certified organic lands. They are certified

according to the international standards. In particular, they correspond to the legislation of the countries of the European Union, Alimentarius Code and the American standards of production of organic production, where 26 enterprises are engaged. That is on average it is about 11600 hectares on one enterprise. It is generally grain and oil-bearing crops which is made from production. From finished production it is possible to call various grain, and also organic vodka which is exported.

Opportunities for strengthening of organic production in the Republic of Kazakhstan are huge, in particular meat (including beef, mutton, a horse-flesh), kumys (horse milk) and cow milk, as Kazakhstan takes the 5th place in the world on existence of pasturable lands, on which the organic pasturable grass is grown from time immemorial.

Reference: the area of natural fodder lands of the republic makes 189,3 million hectares or 69,5% of all territory. Thus, the pastures have 184,3 million hectares, haymakings – 5,0 million hectares accordingly.

At the same time, according to data of the Kazakh Federation of the movement of organic agriculture, the development of organic production isn't stipulated in system of state planning. Expected schemes of territorial development of the country didn't include any indicators up to date, they are not included in the Strategic development plan of the Republic of Kazakhstan till 2020, approved as the decree of the President of Kazakhstan from February 1, 2010 №922 [7].

It is being developed the draft law on organic production now. The group of deputies of Mazhilis and the Ministry of Agriculture are acted as initiators. Unfortunately, for today this draft law is very far from the international understanding about organic agriculture and need to be considerable completed.

The main call for the organic market of Kazakhstan is lack of a purposeful state policy in this sector. Adoption of such policy would allow to provide producers with the state support, to create public opinion and to raise the status of organic goods, to create a basis for preparation of necessary normative legal acts and to reorient a vector of development of agriculture. It should be noted that recently positive tendencies were outlined, both from the Kazakhstan enterprises, and from the Ministry of Agriculture of RK, the increasing attention is paid to development of organic agriculture.

In previous years the German experts were involved by the APD project ("German and Kazakhstan Agrarian and Political Dialogue" project) and information trips on this subject were carried out. Also in February, 2013 it was published "The comparative review on organic agriculture in Kazakhstan and Germany" by the project. In August, 2014 during meetings with the Ministry of Agriculture of RK and at the meeting of Steering committee, the organic agriculture was designated as one of the priority directions for further work. In order to avoid duplication, APD project was cooperated with FEA (Federal Educational Agency) project "Support of development of organic agriculture and accumulation of institutional potential in Kazakhstan". After participation in the first introductory seminar of FEA which took place on February 25, 2015, APD had taken active part as well in the second seminar on June 11 current year. During a final meeting with the head of the working group on organic agriculture at Ministry of Agriculture of RK and experts of FEA project there were coordinated further steps on cooperation. There was appeal to APD project to give support in process of work on the fresh wording of the law and development of standards, and also to promote realization, especially, concerning certification [8].

As result, in Kazakhstan for the beginning of 2015 no one producer of milk raw materials didn't reach the level of certification of the production according to the International standards of organic agriculture.

But, according to the domestic and foreign experts, soon, it will be able to join to number of producers of organic milk also the leaders of dairy branch of Kazakhstan, such as: “Bayserke-Agro” LLP and “Amiran Agro” LLP of Talgar region, Almaty area; Agricultural Firm “Rodina” LLP of Tselinograd region, Akmola area; "Zenchenko and Company" Kazakh partnership of the Kyzylzhar region, North-Kazakhstan area; JSC “RZA” of Kazalinsk region, Kazylorda area; "Kamyshenskoe" Kazakh partnership of Shemonaikhinskiy region, East-Kazakhstan area; “Ais” LLP of Martuk region, Aktyubinsk area; “K. Marks” LLP of Kostanay region, Kostanay area etc.

“Bayserke-Agro” LLP has been already started to the production of organic milk. It was began with production of organic fertilizers which are received by the vermi-composting (processing) of manure from cattle which is made dairy (about 10 thousand ton) and meat (about 30 thousand ton) cattle on a feedlot and also receiving from them two types high-valuable economical and useful products: organic fertilizer of the vermi-compost (the biohumus, vermi-humus, worm-compost or coprolith) and proteinaceous and vitamin fodder flour from biomass of earthworms.

Vermi-composting – is the ecologically safest and "friendly" for environment technology of processing of the biodegradable organic waste. Its essence consists in cultivation in the controlled conditions in organic waste (manure) of technological populations of earthworms and the subtended them of cenosises of soil invertebrate animals and aerobic microorganisms.

Coprolith – is the excrement of earthworms, containing the organic and mineral substances digested in intestines, enriched with aerobic intestinal microflora. They have the granulated form and differ in high water resistance.

Besides, in structure of a crop rotation of farm long-term herbs have to 40% and from them - 30% a lucerne. In the next years it is planned to increase the areas under long-term herbs to 60-70%, the land under which after 3-4 years can be used for production of organic forages with use of organic fertilizers and subsurface tillage, and after feeding stuffs which were grown up on such lands feed to cows and to receive organic milk [9].

In the conditions of the market relations only quality of production can attract the buyer and provide to the enterprise profit. Therefore, to the forefront in “Bayserke-Agro” LLP there is a solution of the problem of increase of a level of quality and safety of milk raw materials and confirmation of its compliance to the international requirements. In this regard

in the farm it is developed and implemented the system of HACCP (Hazard analysis and critical control point), in dairy cattle breeding – is a system of set of the measures, ensuring safety of milk raw materials by means of control of all dangerous points during production.

Creation of such complete system it was required of the thorough preparation, constant attention of the management, training of the personnel in system approach and modernization of the enterprise (introduction of the robotized system of milking and feeding) [10].

Important element of development of this new system was existence of laboratories (at a dairy complex) on the determination of qualitative requirements to milk raw materials and foodstuff. Such system can't be united for all enterprises specializing on production of milk. Production in the different agricultural enterprises is organized differently: differences in the breeding and pedigree structure of animals, level and quality of feeding, the organization of process of milking, preprocessing and storage of milk. Production of milk plant of the Kazakh Academy of nutrition "Amiran" can be the perspective project in dairy branch of organic production in 2015, which is developed only from whole natural milk of the first sort and the premium and it is completely corresponds to system of HRN (Health regulations and norms). This production doesn't contain chemical additives and preservatives therefore the period of storage makes 3-5 days. Today the main problem of the company "Amiran" is the lack of raw materials (organic milk) in the local market. Therefore, the company plans constant increase in use of organic fertilizers on purpose in the short term completely to start to work with production of organic forages without use of chemical fertilizers and, feeding them to cows, to make qualitative organic milk.

Today, usually, it is very difficult to improve system of marketing and to raise knowledge of the ordinary consumer to organic dairy products. In Kazakhstan there are still no requirements to marking of organic production and state system of certification. Therefore, some monopolists of dairy branch use a problem of the domestic legislation and create dirty game in the market, applying "pseudo-marking". In the European countries a prefix "bio" and "organik" can be used only to organic products. In Kazakhstan marking "bio" means only that products are enriched with vitamins and useful bacteria, and "organik" can be used only to organic products. According to data of Kazakhstan federation of the movement of organic agriculture KAZFOAM, prefix "Eko" – is the standard of an environmentally clear product (Standard of RK 1618-2007) which doesn't correspond to the international understanding of organic production [11].

From experience of introduction of organic production, world brands of dairy production of the European countries changed the marking according to requirements of the Resolution of Council of EU regarding to organic production. They began accurately to identify and mark on a label of derivation of bacterial ferment which is added for production of fermented milk product.

Features of certification of organic production in animal husbandry

The agrarian sector has a row immanent to it features concerning use of biological organisms and taking to account the climatic conditions which directly influence on quality of production, and especially organic. Production, which is cultivated on an organic basis, has to conform to the national and international quality standards. For this purpose, producers of organic raw materials and production have to adhere to standards of organic agriculture and marking concerning to marketing outlets. Today the rules of organic production are established an observance of such standards:

1. The international standards which define the minimum requirement to organic agrarian production and directed on established systems of standards for the state and private certification bodies. They are:
- Resolution of Council of the EU 834/2007 (last Resolution of EU 2092/91) and additional resolutions;
- Resolution of the commission of EU 889/2008;
- Regulations of the Commission (EU) №1254/2008 from December 15, 2008, bringing changes and additions to the Resolution (EU) 889/2008
- The resolution of the commission of EU 1235/2008, which submit normative documents of EU, they contain the rules and requirements to organic production.

They act on the territory of all EU countries. It is the most widespread Standard, respectively to which certification of organic production is carried out;

- basic International Standards of organic production and processing of production are approved by IFOAM (The international Federation of the Movement for Organic Agriculture);
- the standard of FEA/WHO of the Commission with the Code Alimentarius.

2. National obligatory standards, which were developed taking into account the international standards and presented in the form of resolutions, which are legally connected:
- The National Organic Program of the USA (NOP) – it is the standard, respectively to which certification is carried out for producers, who are oriented on the American market;
- Japanese agricultural standards (JAS) – it is national standards of Japan, respectively to which certification is carried out for producers who are oriented on the Japanese market [12].

3. The local standards, made on a voluntary basis, which are introduced by certification bodies and can be more exacting, than generally accepted. It is caused by special requirements of consumers (for example, in Germany, Sweden, Great Britain):
- the "BioSuisse" standards – it is private standards of the Swiss Association "BioSuisse", which are spread in Switzerland, respectively the certification is carried out for producers, directed on the Swiss market;
- private standards of members of farmer Association.

Features of management of dairy cattle breeding according to organic standards

For organic agricultural production in organic farms, production of cattle breeding is important in the same degree in which it provides necessary organic and nutrients for the cultivated land and, respectively, promotes to the enrichment land and development of stable agriculture.

Organic production of cattle breeding has to previse close relationship between this production and land, corresponding the crop rotation systems and feeding of cattle with the organic foodstuff, made in own farm or in neighbouring organic farms, and animals have to get access to open space or to pastures (table 1) [13].

Table 1 - Requirement to organic production of animal husbandry

Practice of managing and housing conditions	The personnel who looks after animals, has the corresponding basic knowledge and experience in health protection and wellbeing of animals
	Density and conditions of placement provide satisfactions evolutionary, physicological and the etiological needs of animals
	Animals have continuous access to open space, it is desirable pastures, every time when it is given by the weather conditions and a condition of the soil, if there are no the restrictions and obligations connected with protection of human health and animals on the basis of the legislation
	Density of a livestock of cattle is limited from the point of view of minimizing excessive use of pastures, trampling of the soil, an erosion or pollution, caused by animals
	The organic livestock keeping separately from other livestock. At the same time, a pasture of organic and inorganic cattle on the general land is allowed under some limited conditions
	Tethering or isolation of a livestock is forbidden, except for cases for certain animals for the limited period of time, proceeding from degree of safety, wellbeing or veterinary science
	Time of transportation of cattle is minimized
	Throughout the entire period of life of an animal any pain coming to minimum, including trauma and slaughter
Reproduction	At reproduction use natural ways. At the same time, it is allowed artificial insemination
	Reproduction of animals shouldn't be with use of hormones or similar substances, except separate cases as in the form of veterinary therapeutic treatment of animals
	Other forms of artificial reproduction, such as cloning, change of embryos and sex sperm mustn't be used
	The appropriate breeds are detected. The choice of breeds also promotes the prevention of any pain and prevents traumatism of animals.
Forage production	Forages for animals which are contained at the farm, have to be received, mainly, from the same farm or from other organic farm of the same region
	Organic forages are fed to livestock of cattle that meet requirements of animals in nutritiousness of rations at different stages of development. The part of rations can make forages, received from farms, which are in a transition period to organic managing
	Animals have continuous access to pastures or rough forage
	Inorganic fodder substances of a vegetable, animal and mineral origin, feed additives, separate products, which are used for feeding of animals and technological additives, are fed only in cases when their use was authorized by organic production
	Growth-promoting factors and synthetic amino acids aren't used to calfs and there is given natural, where it is desirable, breast milk
Prevention of diseases and veterinary treatment	Prevention of diseases is based on a choice of breeds, animals, practice of management of farms, high-quality foodstuff and to their use, the corresponding density and conditions of keeping, which meet sanitary and hygienic requirements
	Treatment of disease begins immediately for the prevention of painful perceptions of an animal; necessarily and at severe restrictions, there can be used chemically synthesized allopathic veterinary medical products, including antibiotics, when use of phyto-theraupeutic, homeopathic and other products becomes inexpedient. In particular, restrictions about courses of treatment and the period of expectation are determined
	Use of immunological veterinary medical preparations is allowed
	The treatment connected with protection of human health and animals is allowed

At a choice of breeds it is necessary to consider their ability to adapt for local conditions.

System approach to organic economy requires that production of animal husbandry must be at area, where formed organic waste is used in plant growing.

In organic cattle breeding selection of breeds is based on their ability to adapt for environment, viability, immunity to diseases, and also wide biological diversity becomes simpler.

Thus, organic production will get a double social role - when, on the one hand, it provides functioning of the separate market that corresponds to needs of consumers for organic products, and with another, it presents for the consumer production which will be promoted to the protection of surrounding environment and wellbeing of animals and also development of the village. Besides, in parallel, the part of the certified organic grain and technical crops which are cultivated by the organic operator can be exported to EU and other countries of the world.

DISCUSSIONS

Some aspects of hygiene and production technology of organic dairy products

Production of organic dairy products has to be provided with qualitative dairy raw materials, which first of all depends on structure of forages. A large number of rough forages in a ration promote increase in milk of capacity of essential and unsaturated fatty acids and vitamins (to pro-vitamin A, tocopherol, etc.). Biologically active combinations in milk composition reduce risk of diseases on cardiovascular diseases, on a cancer, positively influence regulation of body weight, visual acuity, etc.

Qualitative and natural milk, as raw materials, has to be received from the animals keeping in the corresponding conditions on the certified lands and to be processed with application of technologies of organic production and the sparing (low) regimens of pasteurization.

Parameters of hygiene of unboiled milk in organic production the following:

- the number of microorganisms has to be no more for 50 000 in 1 sm^3;
- number of somatic cages no more than 200 000 in 1sm^3.

If to be considered the requirements to hygiene parameters, it will be provided avoidance of threat to health of the consumer and receiving quality unique organic raw materials thanks to success of marketing of dairy products in the organic market of Kazakhstan.

The main provision of standard and legal base of production of organic milk raw materials, and its processing, are stated in the Resolution of EU №834/2007 (articles 6 and 8-10). According to this Resolution, for production of organic dairy products it has to be used at least 95% ingredients of organic agricultural origin, and the use of additions needs to be minimized [14].

Standard and legal support of sector of organic production of Kazakhstan demands development of the state acts, which will provide the fair competition and corresponding functioning of the common market of organic products, and also support of confidence of consumers in the products, marked as organic, increase of standards in branch of organic agricultural production and requirements to import and checks of compliance. Such normative and legal acts completely must be accompanied the requirements of technological processes of receiving production in a food chain after the national food legislation.

CONCLUSION

We have the prospects of production of organic dairy products in Kazakhstan, but for its development it is necessary the corresponding legislative base and emergence of enough the accredited certifying bodies conforming to the international standards and also good information and marketing support of organic products.

Adoption of IFOAM standards and studying of experience of other countries at a development stage of the national legislation in the field of certification of organic agriculture have already been allowed to coordinate it with the international standards, and, besides, to save resources for development of regulatory base.

Creation of conditions for development of organic agro-production at least for 20% of agricultural lands will be brought a powerful contribution to a sustainable development of the country and it will be allowed for Kazakhstan to be among world leaders in production of organic production.

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