Prospects for organic horse breeding in Yakutia

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Abstract. The article discusses the prospects for the development of organic horse breeding in Yakutia. The potential of Yakutia in the development of organic animal husbandry is justified by the presence of a huge territory with a favorable environmental situation, the presence of vast areas remote from industrial centers that meet the concept of eco-products. It is noted that Yakut traditional animal husbandry, especially herd horse breeding, is suitable for organic animal husbandry, due to the fact that the requirements are ideally met. Organic animal husbandry requires keeping animals in the most environmentally friendly conditions, where there is no environmental pollution. In the natural way of life to which animals are adapted, where the traditional management system adheres, where animals are adapted to local conditions, emphasis should be placed on the use of organic feeds, which should be natural, nutritious and provide animals with normal physiology and metabolism, should not contain harmful substances, purebred animals without crossbreeds are welcome, that is, local breeds with high resistance to adverse maintenance factors. It is noted that the Yakut horse breeding, with a special technology of maintenance and feeding, provides environmentally friendly dietetic, delicatessen products (foal, internal fat, blood, etc.), which has the prospect of being an export product.

1 Introduction

In the period of difficult economic situation in Russia, the issue of food security becomes a priority for the country's development. At the same time, environmentally friendly products are more relevant than ever. Organic agriculture has been actively developing in the world for decades, while Russia is just beginning to dynamically develop this area and bring products to the market. According to T.M. Svechnikov (2019) for 18 years the number of producers of organic products in the world has increased 12 times, so in 2017 the number of producers of organic products amounted to 2.4 million, when in 1999 - there were only 200 thousand [1].

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In recent years, many scholars have paid attention to analysing the development and management of organic agriculture, particularly organic livestock production. Foreign researchers such as Willer Helga, Julia Lernoud (2018), Ahsan Kabir. (2019), A.K. Das, M. Rahman, P. Mitra (2020), Bojan Dimitrijević Bernhard Schlatter, Jan Trávníček (2023) write about promising methods of organic farming in livestock production [2-5]. Among Russian researchers dealing with questions about the development of the market of organic products, we can mention I.N. Belova (2014), I.V. Kalinina (2015), N.V. Krasovskaya et al. (2018), L.Y. Konovalenko (2021) [6-9].

The development of the market of organic products in our country contributes, firstly, the growing demand of the population for environmentally friendly organic food, many consumers are dissatisfied with the quality of food products produced now. Secondly, the vast territory of Russia with a favourable ecology of land resources not yet applied to agriculture. Thirdly, the steadily growing positive dynamics of agricultural development in general.

At this time, organic food is generally understood to be products that are obtained from organic farming without the use of harmful drugs, and from well-fed farm animals that have been fed high quality feed, without the use of antibiotics, growth stimulants, hormones, steroids and from animals that have been kept in as natural, stress-free conditions as possible.

It is known that organic products are produced in accordance with the legislation and environmental standards approved by the government of the country. Currently in Russia, for organic farming and production of organic products, the Federal Law on organic production dated August 3, 2018, No. 280-FL is in effect, as well as national standards GOST R 57022-2016 "Organic production. Procedure for voluntary certification of organic production" and GOST R 56104-2014 "Organic food products. Terms and definitions," along with the interstate standard GOST 33980-2016 "Organic production, rules for production, processing, labeling, and marketing" [10]. These standards provide for the rejection of the use of pesticides, synthetic mineral fertilisers, growth regulators, artificial food additives, GMOs. For example, the use of preservatives, appetite stimulants, growth hormones, antibiotics is prohibited in livestock production and stress-free housing and transport conditions are required [9].

Last year, the Russian Government approved the "Strategy for the development of organic production in Russia until 2030". In this strategy it is noted that in Russia out of 173 producers of organic products with Russian and (or) foreign certificates of conformity only 10% are engaged in the production of meat and dairy products. In total in the Russian Federation, the number of producers of organic products with Russian certificates of conformity is 111, according to this strategy [11].

And according to L.Y. Konovalenko for 2021 in the Russian Unified State Register of Organic Producers there are 88 enterprises, of which 20 are engaged in organic livestock farming and processing of its products [9]. At the same time, livestock products are mainly represented by dairy products, there are few meat products. Among the organic meat products sold, the first place is occupied by beef, few pork products, practically no horse meat products.

Successful development of organic livestock production depends on scientifically based strategy and methods of farming. In this case, it is necessary to pay special attention to solving such problems as providing animals with good health, not only to increase productivity, to ensure that animals produce ecologically clean and biologically nutritious dietary meat food and therapeutic and preventive products of animal origin.

In our opinion, the market of organic products in the Republic of Sakha (Yakutia) has a great prospect for development due to the fact that it is ideally suited to the requirements of organic animal husbandry. Thus, organic livestock farming requires keeping animals in the
most environmentally friendly conditions, where there is no environmental pollution. It also requires the breeding of animals in a natural way of life to which the animals are adapted, where the traditional management system is adhered to, where the animals are adapted to local conditions.

Organic animal husbandry should emphasise the use of organic feed. The feed should be natural, nutritious and provide the animals with normal physiology and metabolism, and should not contain harmful substances such as growth hormones, GMOs, synthetic amino acids, antibiotics, pesticides and other chemicals. Animals should be kept in a large space with natural air and light so that they can graze and move around freely. In organic farming, it is important to maintain a certain balance of the natural nutrient cycle in the ecosystem, and it is also important that the number of animals is in accordance with the norm and does not lead to trampling and erosion of the soil or pollution of the environment, natural resources (soil, water). In organic livestock farming, purebred animals without crossbreds, i.e. local breeds with high resistance to unfavourable husbandry factors, are welcome. Only from such adapted, robust animals can high quality products be obtained. Organic agriculture requires stress-free housing conditions [3]. Indeed, in Yakutia local breeds are more able to cope with stressful extreme climatic conditions than pomace.

In Yakutia, the presence of a vast territory with a favourable ecological situation, with its wide natural flora and fauna, gives potential for the development of organic agriculture. It is also important to have vast areas remote from industrial centres with ecologically clean nature, which meet the concept of organic production.

All of the above leads to the fact that Yakut traditional animal husbandry, especially herd horse breeding, is ideally suited for organic animal husbandry.

2 Materials and methods

Analysis, processing of information sources (decrees, laws, standards, GOSTs, scientific articles, patents, etc.) and generalisation to determine further tasks of research work on the development of organic agriculture.

The study of fat and blood of horses was carried out in the laboratory of agricultural products processing and biochemical analyses of Yakut Scientific Research Institute of Agriculture on the infrared analyser Spectra Star-2200 by Unity Scientific USA [20]. Technological studies were carried out in the laboratory of selection and breeding of horses at Yakut Scientific Research Institute of Agriculture [16,19].

3 Results and discussion

The development of herd horse breeding in Yakutia is conditioned by the forage capacity of huge natural pastures inaccessible for other types of farm animals. The peculiarity of Yakut horse breeding lies in its non-costly technology. In the harsh climatic conditions of the region there is a year-round pasture-herd keeping of herd horses, where mares of 10-12 heads are in a shoal of one stallion-producer and choose their own habitats all the year round [12]. Unlike other types of farm animals, they do not need sterilisation and this allows them to graze on the most nutritious areas of pasture all year round, i.e. to consume only the more nutritious part of the pasture forage. Therefore, thanks to this technology, only the most nutritious, wholesome pasture products accumulate in the horses' bodies.

In recent years, there has been a positive trend in the number of horses in the Republic. This can be attributed to the more practical technology of their breeding compared to cattle, significant support from the state, the adoption of the Decree of the Head of State "On measures to develop herd horse breeding in the Republic of Sakha (Yakutia)" and a
significant increase in the financing of herd horse breeding. At the beginning of 2024, the number of horses in the Republic totalled 178.9 thousand heads, which is 13.7% of the total number of horses in Russia. The dynamics of the horse population in the Republic is strongly influenced by difficult wintering conditions. The increase in the number of horses is mainly achieved by peasant farms and individual entrepreneurs, the total share of which is 41.6%, while the share of household farms is 39.0%, and the share of agricultural organisations is 19.4% [13].

Yakutia ranks first among domestic producers in terms of horse meat production. Foal meat is in great demand not only among the local population, but also abroad as a dietary and delicacy product. According to statistical data of the Republic of Sakha (Yakutia) it is known that in 2022 a total of 38.8 thousand tonnes of meat in live weight (23 thousand tonnes in slaughter weight) will be produced. According to the calculations of the Ministry of Agriculture of the Republic of Sakha (Yakutia) in 2023 in the republic the planned indicators of procurement of foals (221.8 tonnes) and beef (649.5 tonnes) are fulfilled and brought to 1115 tonnes [13].

The development of organic horse breeding in Yakutia is directly dependent on scientifically based strategies and methods of horse breeding, and the following tasks need to be solved:
- to determine the area for hayfields and pastures for horses suitable for organic production;
- Develop strategies and methods for rational utilisation of remote rangelands and hayfields;
- to introduce the use of grain forage from local raw materials in horse feeding;
- to introduce the use of protein-mineral-vitamin supplements (PMVD) from local raw materials in feeding;
- to obtain ecologically clean and biologically complete dietary food product.

The Yakut horse is a unique aboriginal breed, which is bred primarily for meat, but also for koumiss and skin and fur raw materials. Meat and dairy products of herd horse breeding in Yakutia have high flavour, nutritious and valuable dietary properties. Being a national traditional foodstuff, foals and mare's milk have been an important part of Yakut cuisine for centuries. Foals have high nutritional and biological value, balanced amino acid composition of proteins, high content of essential mono- and polyunsaturated fatty acids, vitamins, some macro- and microelements, contains little cholesterol, due to this foals are low in calories and easily digested, digested by the human body [14]. It should be noted that Yakut horse meat is distinguished by marbling, i.e. intramuscular layers of fat, which give a special uniqueness to the product. The fat of foals deserves special attention, as the content of polyunsaturated fatty acids (PUFAs), especially α-linolenic acid, foal fat surpasses the fats of other farm animals, the high content of essential fatty acids is noted in the internal and abdominal fat [15,16]. As noted by K.M. Stepanov, the content of medium-chain fatty acids (MCFAs) in foals is close to that of milk fat. It is well known that IFAs are hydrolysed faster by pancreatic lipase, do not require the presence of bile acids for their hydrolysis, are more easily absorbed inside the cells of the intestinal mucosa without preliminary complete hydrolysis, and after absorption go directly into the portal vein system, not into the lymphatic system. All these features of fat digestion and absorption with MCFAs make it possible to use them in various disorders of fat absorption and can be recommended for children's nutrition [17].

Important for the development of organic direction in herd horse breeding is not only obtaining ecologically clean and biologically full-fledged dietary food products, but also therapeutic and prophylactic products of animal origin. For example, from raw materials of herd meat horse breeding we develop new products from fat of Yakut breed horses (encapsulated), from blood of Yakut breed horses - dry tableted blood, which can be
referred to therapeutic and prophylactic products. At present, one product is patented [18]. Research work has been carried out, as a result of which the technology of preservation of Yakut breed blood by drying on infrared radiation, the technology of extraction and concentration of fat lipids with PUFA, experimental prototypes of products have been developed [19,20].

The sale of organic food products, supply of products to other regions of Russia and foreign countries (USA, China, Japan) can bring serious income. Great prospects for increasing the number of herd horses and the development of organic horse breeding have the northern regions of the Republic, where fertilisers and herbicides have never been used, and the horse grazes on pastures all year round without feeding hay and grain forage.

4 Conclusions

Thus, herd horse breeding in Yakutia as an industry for organic food production has great prospects. To meet the increasing demand for organic products, Yakutia has a high potential to increase organic production in the country. Organic agriculture will help to maintain the high agricultural potential of the country in the long term.

References


