Russian export of products of maral breeding and velvet antler industry

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Abstract. The possibility of maral breeding production export and velvet antler industry is considered in the article. Development of maral breeding and antler industry in Russian regions is important for ensuring compliance of objective requirements of society for production of maral breeding and velvet antler industry and problems of social and economic development of the regions that are rearing deer. In article modern conditions of development of production potential of maral breeding and antler industry of the region decide on orientation to export and possibilities of use of the innovative technologies promoting improvement of quality of production according to requirements of the foreign market are revealed. The article defines the main strategic directions of development maral breeding in the regions of Siberia, focusing on deep processing of raw materials, high productivity of marals, improving the quality of deer punts, compliance with veterinary and sanitary requirements, promotion pant products to foreign and domestic markets. The development of integration processes in maral breeding and velvet antler industry in Altai Republic and Krasnoyarsk region allow to reduce the cost of production and sale of final products, rational usage of economic and natural resources, strengthen competitive positions and control the market situation.

The velvet antler industry is of paramount importance for the recovery of the population of Russia, on the basis of the production of constantly reproducible raw materials of natural origin, necessary for the manufacture of highly effective medical and health-improving products. In the developed countries of the world, one of the ways to solve the problem of healthy nutrition is the use of ONS (known as oral nutritional supplements). In the US, about 80% of the population use ONS, in European countries - about 50%, in Japan - about 90% [4]. One of the priority areas of modern nutriçiology is the search for new sources of natural biologically active components and the production of specialized products with targeted functional properties based on them, received support at the state level in documents developed by the government and approved by the Russian president.

One of the main reasons for the increasing need for oral nutritional supplements is that they are enriched with vitamins, minerals and trace elements that can be used to correct diets, maintain and promote health, normalize metabolic processes, prevent diseases, speed up recovery and recovery [4].

Today, the maral industry is a supplier of unique medicinal raw materials. The range of products produced in our country is 90% food products or cosmetics derived from raw marals. According to I.S. Popova, in the Russian regions significant competitive advantages are used in creating a certain group of products made from raw materials of antlers, which include medical drugs, food additives and medical technologies for using balneological procedures now available [4].
In Russia, insufficient attention is paid to the breeding of marals and the development of its breeding and the velvet antlers; the value of reindeer and the resulting products from reindeer horn have not been evaluated. In Russia, the main attention is paid to extensive methods of development of this industry. Insufficient elaboration of some theoretical and practical aspects of increasing the efficiency of development of production and economic activities in market conditions identified the need to find ways to improve the conditions for the development of maral breeding industry, industrial production of antler reindeer husbandry and sales opportunities in Russian regions and abroad.

In the works of Russian authors such as S.N. Bocharova, V.N. Ege’, N.G. Deeva, V.G. Lunitsyna, A.P. Popov, N.A. Frolov and others the problems associated with the development of the branch of maral breeding, breeding of reindeer and the manufacture of antler maral breeding are considered.

Despite the significant contribution of Russian scientists to solving the problems of maral breeding and reindeer herding, the issues of sustainable development and breeding of reindeer are not well studied in modern literature. Prospects and opportunities for the development of reindeer breeding and receiving reindeer horn products, with a focus on export to foreign countries are not fully disclosed and require further development. The export of goods made on the basis of raw materials processing obtained from deer will significantly increase the profitability of this industry, thus, more and more businessmen are showing interest in investing to the production of maral breeding.

The purpose of the study is to determine the prospects for breeding reindeer, the production of goods from the antler in the regions of Russia and the export possibilities.

To achieve the purpose of the research the following tasks were solved:

- a study of the possibilities and trends of increasing productivity in the breeding of reindeer and the production of goods from the antler in modern conditions was conducted;
- export opportunities through the introduction of scientific and technological innovations in the reindeer breeding and the production of goods from deer horns were identified;
- the results of the study of the current status of reindeer breeding and production of goods from the antler in the Krasnoyarsk Territory and other regions of Russia are presented.

In the Russian Federation in 2005, 184 enterprises of various forms of ownership were operating in the sector of deer farming and antler reindeer husbandry. 28 enterprises bred sika deer, 156 were engaged in maral breeding. From the total number of 97 thousand marals and 25 thousand sika deer, it is possible to receive more than 45 tons of canned antlers annually. In the Krasnoyarsk Territory, Khakassia, Kaluga and Tver regions there are small farms for the maral breeding, and farms for the sika deer breeding are mainly located in the Kaliningrad region, Stavropol and Krasnodar regions, and Kabardino-Balkaria.

The Altai Territory and the Republic of Altai are the leaders in professional maral breeding; Primorsky Territory is engaged professionally in the sika deer breeding. These regions provide up to 98% of all products of antler reindeer husbandry in Russia.

Until 1985, in the Primorsky Territory, 12 large state-owned farms were engaged in the sika deer breeding, its population reached 50 thousand individuals. More than 10 tons of canned pantas were produced annually in this region. The government supported industrial production. Due to the transition to a market economy, the price of manufactured products dropped significantly, besides, on a foreign market; Russia had an influential competitor — suppliers of antlers from New Zealand. During this period, herds of sika deer began to decrease and at the moment the livestock population is about 12 thousand animals. Until 1985, the “Altai” Association included 15 animal farms with a livestock population more than 25 thousand sika deer, and the annual number canned antlers was more than 15 tons.

As a result of the separation of the autonomous region of Gorno-Altaiisk, there are 3 enterprises in the Altai Territory producing antler maral breeding with a population of 5.5 thousand marals: in Soloneshensky, Altai and Charyshsky districts. These enterprises annually produce about 3 tons of canned antlers. The rest of the livestock is located in the Altai Republic.
Control of the territory of reindeer breeding by employees of the All-Russian Research Institute of Altai, Krasnoyarsk region, Soloneshensky, Ust-Kalsky districts of the region revealed positive trends associated with the possibility of creating about 30 farms for breeding reindeer and marals. For the development of the industry the necessary financial resources for the construction of farms and the purchase of animals were allocated. As a result of the measures taken in 1993, the number of marals increased to 10 thousand, sika deer more than 7 thousand. In the following years, funding was suspended and the development of the industry began to decline. In 2005, on these farms, 5.609 kg of canned antlers were produced at a minimum price of 3,100 rubles to a maximum of 9,046 rubles for 1 kg of antlers.

In 2008, in the Charyshsky district, reindeer were bred and antlers were produced in: 6 agricultural enterprises and 11 maral breeding and reindeer farms, which contained 1.624 sika deer and 8.761 marals, one private enterprise with 612 deer. In Solonoshensky district there were 7 agricultural enterprises where marals and sika deer were bred. In 2005, these enterprises received 2,902 kg of canned antlers; the sales price for 1 kg of maral antlers was from 5.7 to 7.8 thousand rubles, and sika deer from 4.2 to 4.7 thousand rubles. During this period, only three collective farms in the industry of antler reindeer breeding and 4 farms with a livestock of 2.534 marals worked in the Altai region. In the same period, only 6 private enterprises had a population of 3.687 marals. In 2005, 3.847 kg of canned antlers were received on farms in the Altai region; the average selling price was from 5 to 8 thousand rubles per 1 kg.

The maral industry is one of the main areas of employment for residents of rural areas of the Republic of Altai. In addition to the large social role played by this industry in the region, it provides employment and supports the culture of indigenous peoples of the Altai Republic, and also contributes to the development and creation of infrastructure in the border areas rich in resource potential [1].

Maral breeding farms provide effective support to local authorities: they provide vehicles for regional events, assist in the repair of schools, and participate in firefighting activities in forests. In the Republic of Altai at the beginning of 2014, there were 90 farms of various forms of ownership breeding reindeer. On January 1, 2014, the livestock was 838 sika deer and 51.788 marals, 76.2% of the total population of the Russian Federation for the production of antlers. Eight out of ten farms are located in the Altai Republic. In rural areas, marals breeding farms partially solve the problem of employment of the population of the Altai Republic and partially relieve social tensions [1].

91.6% of the main livestock of marals is concentrated in 4 districts of the Altai Republic: 44.4% - Ust – Koksinsky; 19% - Onguday; 16.8% - Ust-Kansky; 11.4% - Shebalinsky district. The leader in the production of antlers is Ust-Koksinsky, it accounts for 45.9% of the production of antler maral breeding of the Republic of Altai (2012 - 43.7%); the Onguday district is the leader in production antlers from one animal unit – 5.6 kg of raw material. Ust-Koksinsky district takes 2nd place - 5.1 kg of raw materials production, followed by Shebalinsky - 4.8 kg, Ust-Kansky - 4 kg, Mayminsky - 3.6 kg [1]. The average output from one “stag beetle” in 2013 was 4.9 kg of antler raw materials. Compared to 2012, the efficiency on one animal unit decreased by 2.6% (130 g of antler raw material) and by 50 g of canned antlers. 11 farms of the maral industry in the Altai Republic receive more than 1 ton of canned antlers. Among the remaining 82 maral breeding farms, only 5 are dynamically developing: LLC Sarat, CJSC Marau, LLC Maral-Tolusoma, SEC Tenginsky Plemzavod, and the Karjakhik farm. In the Altai Republic for ten-year period from 2003 to 2013, there is an increase in the number of marals, their livestock increased by 1.311 heads, which amounted to 2.6%. In 2017 there was a decrease of 3.500 sika deer by 80.6% compared with 2003, almost 5 times (table 1).

| Table 1. Livestock of marals and sika deer in the Altai Republic. |
|------------------|----------|----------|----------|----------|
| **Years** | **2003** | **2008** | **2013** | **2017** |
| Total number of livestock: | | | | |
| Maral | 50477 | 56276 | 51788 | 49304 |
| Sika deer | 4341 | 2795 | 838 | 615 |
From the given data on the livestock of marals for ten years, it can be seen that up to 2008 inclusive there is an increase in the population, and then there is a tendency to decrease. Compared to 2008, by 2013, the number of marals decreased by 4,488 animal units, or by 7.97%, and the number of sika deer decreased dramatically. The decrease in the livestock of marals in the Republic of Altai was due to the high mortality of animals - 6.4% (2012 - 5.5%), low culling - 5.4 (2012 - 5%) and low business offspring - 43% (2012 - 42%). During 2013, 3,390 marals died (6.4%), sika deer - 102 animal units (11.2%). For slaughtering: marals - 2844 heads (5.4%), sika deer 22 heads (2.4%) [1].

Production of maral breeding is one of the main areas of employment for rural residents, and it should be noted that the government of the Republic of Altai and the Altai Territory develops and implements targeted programs for the development of maral breeding and the production of raw materials [3]. But as practice shows, more attention should be paid to the development of exports of maral production in the region. The Altai Territory is one of the most developed regions for the establishment of international relations in the field of health care, for the development and implementation of innovative projects aimed at the production of medicines based on antler products [2].

Krasnoyarsk Territory is considered as one of the regions for the developing export of products of marals farming and antler reindeer husbandry, as it has competitive advantages associated with proximity to the actively developing markets of Central and Southeast Asia. Krasnoyarsk Territory has the potential for environmentally safe breeding of sika deer in the foothills of the Sayan Mountains [5]. One of the elements of the production potential is the existence of favorable climatic conditions in the foothill areas, which contributes to the breeding of marals. Most of the regions with similar conditions are already developing the industry of maral breeding, enterprises have been created on the basis of various forms of ownership. The leaders in the number of marals are the Republic of Altai, in which there are 190 farms; the Altai Territory, it has 24 farms; and the Krasnoyarsk Territory – there are 8 farms.

It should be noted that the growth rate of the livestock herds of marals and the production of antlers in comparison with other countries (New Zealand, Korea, Australia) are at a rather low level. The maral and reindeer breeding industry retains its dependence on a more developed South Korea, as it is a supplier of raw materials. South Korean businessmen, annually artificially create the conditions for the purchase of raw materials at a reduced price in isolated farms in the regions of Russia. Russian suppliers of raw materials should pursue a coordinated pricing policy, although this is hampered by non-transparency of mutual settlements: a part of the income in the currency obtained as a result of a low price can be compensated personally by the company in the form of a so-called “black cash”.

Reindeer breeding is currently taking place under the specific conditions of “price scissors”, under which all factors of production (electricity, materials, etc.) become more expensive, and purchase prices for raw antlers decrease annually. This is one of the forms of the artificially created monopoly of consumers of raw materials in the maral breeding industry. Preserving the quality of antlers is the most difficult stage of work in antler production. Today, the requirements of the state standard GOST - 4227 are in force. High-quality antlers by all evaluation criteria are only 30%, 40% has satisfactory quality, 20% are unsatisfactory, and 10% is a waste. Therefore, it is impossible to achieve a stable, high price for antlers. Improvement in quality is possible through the cooperation of small producers with large enterprises. An example is LLC Maral-Tolusoma in the Shebalinsky district of the Altai Republic, in which antlers for small enterprises have been produced for the previous five years. For all the antlers, a single color is set and they are sold in one batch at more favorable prices.

It is advisable for enterprises to send large antlers of the maral breeding industry for export, and small antlers to sell on the domestic market, since the price level in Russia for such products exceeds the prices that Korean businessmen can offer. The orientation of antlers sales on the Russian market also has a social effect. It is revealed that the population of Russia is lagging behind all industrialized countries in life expectancy, which indicates the need to pay attention to the health of the nation. The production of antler reindeer breeding has a wide range of applications both for the treatment and for the prevention of many diseases, since it has no negative side effects, it has a biological activity, and it...
is environmentally friendly. The production capacity of raw materials for medicines can be increased through the use of waste-free production technologies.

Due to further sending antlers for export it is necessary to enlarge the date of expiry of raw antler breeding through conservation. There is a growing need to attract specialists who can do blood sampling from deer donors, as well as experts who have the skills and abilities to perform such manipulations. Qualified work affects the quality of raw materials, which in turn increases the price and profitability of antler deer breeding production.

Labor potential is considered as one of the most important factors of industrial potential in the industry of antler reindeer husbandry. Thus, in the mountainous area, for the farms of antler marals breeding, the main task is to reduce the cost of producing raw materials, and to observe the deadlines for the production of antlers. In agricultural enterprises there are often no workers of the proper qualification, and the management is forced to sign contracts with third-party organizations for the implementation of special services for the receiving and conservation of antlers, which leads to an increase in financial expenses and an increase in the cost of produced goods, antlers. In addition, special attention should be paid to the preparatory stage in order to gather animals to the sites for cutting antlers, so as not to injure the animals during their descent from the mountains. These animals belong to the elite, expensive breeds, as they have high productivity.

Particular attention should be paid to the development of integration processes of antler breeding farms of the Altai Republic and the Krasnoyarsk Territory. Combining efforts from the state and private companies will allow overcoming the identified problems:

- to reduce costs for the production and sale of finished products from antler raw materials;
- to use economic resources rationally;
- to reduce the interaction barriers;
- to strengthen the competitiveness and control over the market situation;
- to reduce the financial risks;
- to coordinate the joint actions;
- to improve the economic conditions due to the mechanism of income redistribution;
- to use the innovative technologies.

Modern technologies for breeding sika deer and marals, processing the raw materials will allow:

- To save the lives of animals - donors, without injury when collecting raw materials;
- To be located in the immediate vicinity of the intake sites to processing stations to reduce the loss of useful properties of raw materials;
- The technology of deep processing of raw maral does not require special competence and allows to get high-quality products that meet modern sanitary and epidemiological, pharmaceutical requirements;
- Innovative technology allows obtaining products that are consistent with the market of Asian partners and is easily integrated into the existing process of breeding animals and receiving raw materials.

A set of measures to expand the range of products derived from antlers will allow the use of non-waste production technologies, improve product quality that meets the requirements of the foreign market, and orient production to export to South Asian countries.

Thus, consideration of the specific features of the production structure of the deer industry allowed to determine the main perspective of the development of foreign trade. Regions that develop the industry of maral breeding and antler reindeer breeding have the potential to increase the export of not only raw materials (antlers, blood, meat), but also expand the range of products based on these raw materials. This, in turn, will lead to the creation of enterprises for the processing of antler raw materials, and will
significantly increase the population employment of the regions, the location of marals and sika deer. The increase in Russian exports to new markets will lead to a strengthening of the geopolitical influence of the Russian Federation in Asian countries. The maral industry is of strategic importance for the development of Russian regions, it should be focused on deep processing of antler raw materials, improving the quality of antlers, increasing the productivity of marals, maintaining phytosanitary, veterinary and medical requirements, promoting the products of this industry on foreign and domestic markets.

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