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## Production and processing of oilseed crops – a strategic agro-industrial complex development vector of the Krasnoyarsk territory

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# Production and processing of oilseed crops – a strategic agro-industrial complex development vector of the Krasnoyarsk territory

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**Abstract.** The article presents the research results on the world and domestic market of oilseed crops and products of their processing, reveals regional peculiarities of the Krasnoyarsk territory agro-industrial complex, on the basis of which the strategic guidelines for the industry development in terms of increasing non-oil and gas export potential of the region and the implementation of the food import substitution course are formed. Particular attention is given to the analysis of enterprises engaged in the cultivation of grain, industrial and other crops for compliance with their production capacity in relation to rapeseed and market opportunities for export activities. The integrated industry standard and the regional brand in the category “processed products of oilseed crops” serve as the main strategic vectors of the industry development and will expand the possibilities of diversification of enterprises activities when entering foreign markets. They will serve as a serious methodological basis for the formation of the institute of regional programs to support local products aimed at stimulating demand for domestic food products and improving their quality.

## 1. Introduction

In recent years, the development of the country agrarian sector has been going on in a difficult socio-economic situation due to a number of new internal and external factors. The increased competition in the domestic and global agri-food markets, the globalization of economy, the deepening and expansion of the labor international division in the agro-industrial production, the sanctions against Russia and Russia’s retaliatory embargo on a number of goods, as well as the focus on the non-oil and gas exports, create a powerful impetus for the industry development.

The Krasnoyarsk territory is rich in raw materials. However, for the successful economy development and the territory positive image formation, it is not enough to be the main exporter of natural resources. It is necessary to become a highly developed industrial region of Russia through the production of competitive goods by local producers, providing import substitution and increasing the regional export potential.

The production of oilseed crops is of strategic importance for the development of the regional agro-industrial complex. Rapeseed is one of the few crops with a guaranteed distribution market in domestic and foreign markets. There is a high demand for rapeseed seeds and oil by the Asia-Pacific region countries as well as by processing plants in the Russian Federation. Rapeseed extraction cake is in demand on the domestic market.



In the conditions of increasing competition in the fat-and-oil industry, it is necessary to orientate the enterprises on the production of high-quality, competitive products with a wide range (rapeseed, ginger, soy, mustard, linseed, cedar oil) with lower cost, improved consumer properties and in compliance with international standards. The latter, in turn, will ensure the expansion of consumer demand and access to the world market. Taking into account the potential of the Krasnoyarsk territory, the positive dynamics of the SFD (Siberian Federal District) in the oilseed crops production, followed by deep processing, the region can take one of the leading places in the industry.

The purpose of the study is to determine the strategic guidelines for the development of agro-industrial complex in the Krasnoyarsk territory in terms of increasing non-oil and gas export potential of the Russian Federation regions and the implementation of the course for food import substitution, taking into account external challenges and regional characteristics of individual territories. The samples for the research were the existing enterprises of the Krasnoyarsk territory engaged in the cultivation of grain, technical and other crops.

## 2. Literature review

Numerous market studies, publications and periodicals show that the interest in rapeseed among Russian farmers is growing. First of all, because oilseeds are more profitable than cereals. In the last two or three years, prices for rapeseed were higher than for sunflower. Largely, the agricultural crop production is expanding due to the Asian part of Russia – Siberia.

Siberia confidently claims the title of the rapeseed region – already now it accounts for more than 40% of Russian rapeseed crops. Last year, the Siberian Federal District became the largest producer of rapeseed in history. The technology of rapeseed cultivation in Siberia developed.

According to experts, the attractiveness of rapeseed is not only in the price and yield, but also in its impact on the soil in crop rotation [1]. A special benefit of rapeseed oil is that fatty acids are ideally distributed in it, they amount to only 7%, in sunflower oil – 12%, and in olive oil – 15% [2].

It is Siberia that has all the chances to become the largest producer of rapeseed in Russia – because of its bioclimatic potential and soil conditions. The territory of Siberia is ideal for cultivation of cabbage crops. Rapeseed is one of the few oilseed crops that can guarantee the harvest of ripe seeds in areas with a relatively short growing season. This contributes to its promotion in the more Northern territories of the Siberian region, thereby increasing the area of crop cultivation.

## 3. Materials and methods

### 3.1. Export potential of the region

One of the incentives for the Siberian “rapeseed producers” was the efficient export of this crop to China and Mongolia. Rapeseed has become one of the leading products in the Siberian Federal District (SFD) in terms of exports (table 1).

**Table 1.** Non-oil and gas and non-energy export of goods (SFD).

№	Code	Commodity	2016	2017	2018	2018	
			million, dollars		share, %	growth, million, dollars	rate, %
26	1205	Rapeseed	11,0	55,5	66,2	0,4	+10,7
							+19,3

In 2018, this trend continues, SFD occupies the 2<sup>nd</sup> place in Russia in terms of rapeseed export. In the structure of non-oil and gas and non-energy exports of Russia, rapeseed occupies the 9<sup>th</sup> place and has the share of 35.2 % in 2018 in the Siberian Federal District (table 2). Exports are growing every year; rapeseed is one of the three most popular oilseed crops in the world.

**Table 2.** The role in non-oil and gas and non-energy export of Russia (SFD).

№	Code	Commodity	2018	
			million, dollars	%
9	1205	Rapeseed	66,2	35,2

It should be noted that there is a higher growth of areas for this crop in the Krasnoyarsk territory – by 13.8 times, as well as a significant increase in seed production – by 15.6 times in 2017 compared to 2005. Even compared to 2015, the sowing areas increased by 2 times, and the volume of production – by 2.3 times. In 2018, the area of spring rape in the regional farms increased in comparison with 2017 by almost 2 times and amounted to 114,0 thousand hectares. Not only domestic demand, but also external demand has a great influence on the expansion of oilseed crops production. China is the main export consumer of rapeseed.

The Krasnoyarsk territory currently exports rapeseed to foreign markets, but the existing volumes are not significant and do not play a great role in the structure of non-oil and gas and non-energy export of the region.

To date, 130 agribusiness entities are engaged in the cultivation of spring rape in the territory of the region (in 2017 – 76, in 2016 – 65), which is 200 % to the level of 2016. According to the “Krasnoyarskstat”, the average yield of spring rape in 2017 in the region amounted to 12.0 c/ha, which is comparable with the average yield in Russia. 96 agribusiness entities of the region, engaged in the cultivation of spring rape, have a yield capacity below the average regional. The maximum yield of spring rape is recorded at the level of 33,83 c/ha.

Agricultural producers in the Krasnoyarsk territory started including oilseed crops in crop rotations very actively. The economic feasibility of growing rapeseed is undoubtful. As evidenced by the analysis of world and European prices, its cultivation provides high profitability. The increase in the rapeseed production is also associated with a significant increase in the consumption of vegetable fat by the population of the planet.

Based on the demand analysis and market assessment, the production of rapeseed oil and its export abroad (90% of the total) is considered to be the promising direction. Without access to foreign markets, new production will not be compensated, and the implementation of large volumes of edible vegetable oil in the domestic regional market is an unrealistic task, due to the current domestic culture of consumption.

The conducted research has shown that the Siberian vector of export development is Asia, China, Mongolia.

Domestic consumption of vegetable oils in China has been growing continuously in recent years. According to experts of the Chinese oil and fat market, by the end of the 2017/18 season, the total consumption of vegetable oils in China will reach almost 32 million tons. The main driver of growth in the oil and fat products consumption in the country is the population increase that by the end of 2019 will be more than 1.4 billion people.

The country's population growth, combined with the growing level of citizens' well-being has made agriculture a vital industry in China, and the production of healthy food has become a new national trend. The structure of vegetable oil consumption in China differs from the Russian: the three most popular in the country food oils include soybean, rape and peanut. In the future, it is possible to expand the geography of sales making long-term contracts.

It is possible to sell the part (10% of the total) of edible rapeseed oil in the domestic regional market for the food industry, which is dependent on vegetable oils for the manufacture of fats, mayonnaise, salads. The rest of the rapeseed oil and all produced cake can be sold on the forage market of the Krasnoyarsk territory. There is a high demand for cake from poultry farms, pig farms, formula-feed plants.

### 3.2. *Uniform industrial brand in the category of “processed products of oilseed crops”*

To optimize the conditions of export activities in the region and the introduction of the Regional export standard, one of the mechanisms of which is the “regional brand in foreign markets”, regional support is important. The latter is relevant in relation to the development of a regional brand model in the category of oilseeds processing products as a source of sustainable competitive advantages of the Krasnoyarsk territory agro-industrial complex.

In the world and domestic branding practice, regional brands mainly appear among food products.

Let's consider the regional experience of creating a single brand, for example, “Selo rodnoye” (“Native Village”). “Selo rodnoye” (“Native Village”) is the unified brand that united the local dairy producers in the Krasnoyarsk territory. The basis of the positioning concept is naturalness, environmental friendliness and freshness of products.

As a result of the merger, the volume of product supply to retail outlets increased. Manufacturers distribute their products by a single logistics system. This is a particularly important factor for dairy products. The company guarantees customers high quality and genuine products, as in addition to their own strict control all products undergo additional independent quality checks in Krasnoyarsk Center of Standardization and Metrology, which are confirmed on the packaging with a special sign “Yenisei standard”.

Domestic experience can also be considered on the example of the brand “Vologodskoye maslo” (“Vologda butter”). “Vologodskoye maslo” (“Vologda butter”) is unsalted sweet creamy butter with a mass fraction of moisture not more than 16.0 %, produced in the Vologda region, known for its special taste and aroma, acquired as a result of special processing of high-quality fresh cream under the influence of high temperatures. “Vologodskoye maslo” (“Vologda butter”) is in the top 100 Russian brands. Currently, the owners of certificates for the right to use “Vologodskoye maslo” (“Vologda butter”) are eight dairy enterprises of the Vologda region. The stable high quality of the product is annually confirmed by high awards at professional Russian, international exhibitions and competitions. In 2018, four famous brands of the Vologda region appeared in the TOP 100. Regional brands are recognizable all over Russia and abroad, tourists want to visit this territory. The strategic goal is to further develop tourist destinations, create high-quality, interesting and price-attractive products.

The advantages of the regional brand in the category of processed products of oilseed crops are:

- a new brand, specially designed taking into account the conditions of the region (the Krasnoyarsk territory);
- the development of the local industry standard, a united industry brand in the category “processed products of oilseed crops”;
- own production facilities in the region can significantly reduce the production cost and, therefore, make it more competitive in the market;
- compliance of the regional brand with the strategic objectives of the territory development – ensuring the presence of the Krasnoyarsk territory brand in the information space, the recognition of the region's sign, as well as attracting the inflow of financial resources to the territory and increasing the competitiveness of the region;
- if there is a regional brand, it is possible to increase the non-oil and gas exports of the region and to introduce the Regional export standard.

## 4. Results

LLC “Khozyain” (LLC “Owner”) according to the register of the Krasnoyarsk territory agricultural enterprises is a grain processing enterprise, with well-established sales of products in domestic and foreign markets. The enterprise at the expense of its own and borrowed funds constructed and launched an elevator and a seed plant for 60,000 tons of seeds, which allows to supply raw materials in large volumes, for further processing.

It is the only enterprise in the region where the active work on the development of modern, effective production on processing of oil crops on vegetable oil and cake, as well as increase in capacities for processing of grain on flour and bran is being conducted. The company employs 125 people.

In 2018 the company purchased 32 000 tons of rapeseed at 580 million rubles from the regional agricultural producers. In 2019, 24 800 tons of 2018 harvest will be purchased. 30 000 tons of rapeseeds were sold to the Republic of Belarus and 2000 tons to China.

It is planned to construct a plant for the production of vegetable oil: processing 24,800 tons of oilseeds per year, production of 8,400 tons of vegetable oil, 14,880 tons of oil cake. In order to implement the project, it is planned to receive state support in the form of subsidizing of the equipment costs for the plant for the vegetable oil production.

The potential market capacity of rapeseed oil for domestic and foreign markets is calculated through the specific oil consumption on the basis of statistical data (in Russia – 13.9 kg/per capita per year, in the Krasnoyarsk territory – 11.2 kg). Let's calculate the potential of the enterprise in the market (table 3).

**Table 3.** Potential market share of LLC “Khozyain” (LLC “Owner”) in the domestic and foreign markets.

Indicator	Potential (volume of oil consumption / rapeseed oil), tons	Market share, %
Market capacity of the Krasnoyarsk territory	32139/2571	100,00
LLC “Khozyain” (10% of the total volume on the domestic market)	2400	93
Market capacity of China	32/ 8,4	100,00
LLC “Khozyain” (90% of the total volume on the foreign market)	0,024	0,28

Thus, the potential of the domestic market of rapeseed oil for the enterprise is 2571 tons. The estimated market shares for rapeseed oil, which the products of LLC “Owner” will take, will amount to 93%, since there is no competition in the region for this category of goods now.

In order to cover and maintain market positions, the tactical plan of necessary measures includes: the use of internal business processes to improve the quality of products; the preservation of selling prices for products at normal profitability; the organization of effective feedback from buyers; the promotion of products through participation in regional, city and international food exhibitions.

Based on demand analysis and market assessment, 90% of rapeseed oil produced by the company is planned for export. Without access to foreign markets, the new production of LLC “Khozyain” (LLC “Owner”) will not pay off, and the implementation of large volumes of edible rapeseed oil in the domestic market is an unrealistic task. The potential of the Chinese market is huge. Thanks to the right strategy of gradual market development, the company will be able to prepare the ground for interaction with the final consumers of fat-and-oil products and conduct productive negotiations [3].

An important aspect of the implementation of the enterprise design solutions and strategic measures to create a regional brand in the category of “oilseed processing products” is the creation of the necessary conditions and support by government agencies in the region in all areas: legal, organizational, economic.

## 5. Summary and conclusions

The considered strategic guidelines are aimed at the development and strengthening of the raw material base of the Krasnoyarsk territory agro-industrial complex, the storage capacity and industrial

processing of rapeseed, the creation of production for food, technical oil of a wide range, as well as cake.

The growth of production and sales of products with a wide range (rapeseed, ginger, soy, linen, mustard, cedar oil) will allow residents of the Krasnoyarsk territory to have a consumer choice and purchase high-quality products as the best alternative available on the market and imported into the region.

The Krasnoyarsk territory is considered to be the largest agricultural region of Central and Eastern Siberia, fully meeting the needs of the population in basic food products. It has every reason and opportunity, including the creation of a regional brand, to increase exports of oilseed processing products.

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