Strategic prospects of the Krasnoyarsk territory agro-industrial complex in the market of oilseeds and vegetable oils

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Abstract. The article presents the research results on the domestic market of oilseeds and products of their processing, the prospects for the market development and its diversification. The conjuncture of the vegetable oil market in the Russian Federation and the Krasnoyarsk territory is analyzed. The guidelines for the development of the industry in terms of building up non-oil export potential of the region are formed on its basis. Special attention is paid to the analysis of market opportunities for export activities in the market of oilseeds and vegetable oils in the Krasnoyarsk territory. Promising areas of the Krasnoyarsk territory for the production of oilseeds are identified. In practical terms, the research results are the analytical basis for making strategic decisions in the development of long-term programs for the development of agriculture in the region.

1. Introduction
The domestic oil and fat industry is the leader of the country’s agro-industrial complex in the structure of non-energy exports and has a significant export potential, due to the steadily growing demand for vegetable oil on the world market.

According to the Institute of Agricultural Market Conjuncture (IAMC), in the 2018/19 season, Russia took the 5th place among the world exporters of vegetable oils after the “palm” states (Indonesia and Malaysia), as well as direct competitors: Ukraine and Argentina. In the 2018/19 season, Russia exported a record 3.7 million tons of key oils (sunflower, soybean, rapeseed), which is 15% more than last agricultural year [1].

In the conditions of increasing global consumption of vegetable oils and increasing competition in the oil and fat industry, it is necessary to focus enterprises on the production of high-quality, competitive products with a wide range (soybean, rapeseed, ginger, mustard, linseed oil), improved consumer properties and compliance with international standards. The latter, in turn, will ensure the expansion of consumer demand and access to new world markets. The existing potential of the agricultural sector of the Krasnoyarsk territory and the positive dynamics of the SFD (Siberian Federal District) development in the production of oilseeds, allow the region to take one of the leading positions in this industry.

Oilseeds as a separate export direction are very important for Russia in general and for the Krasnoyarsk territory in particular. The favorable location of the region opens up great opportunities for the export of oilseeds processing products to the countries of East Asia.

The purpose of this research is to determine the measures for further effective and competitive development of the oil and fat industry enterprises in the Krasnoyarsk territory in the future based on
studying the market situation indicators characterizing the current state of the oilseeds and vegetable oils market.

2. Literature review
Russia as a whole fully provides itself with vegetable oil and is its major exporter. The advantage of Russia is the fact that the entire territory of the country is suitable for growing oilseeds. In fact, each region can grow oilseeds, which are in demand on the world market. Oil and fat products are multifunctional and deep processing products [2]. The peculiarity of the domestic oilseeds market is the species diversity of the constituent markets [2]. The Russian market of oil and fat products is one of the most capacious, saturated and highly competitive.

The main oilseeds cultivated in Russia include sunflower, soybean and rapeseed – they account for about 95% of the gross harvest of oilseeds, and sunflower, in particular, more than 80% [3].

However, despite the positive dynamics of the industry in Russia, there are a number of problems:

First, there is a situation of the raw materials shortage for the oil and fat industry, underutilization of capacity by 30% [4] and as a consequence, the imbalance in the growth of raw materials production and processing capacity.

Secondly, the lag in yield per 1 hectare of arable land compared to the indicators of developed countries, which is associated with inefficient use of land resources.

Thirdly, the necessity for government regulation of a “fair” price that will ensure expanded reproduction in the chain from the “field” to the “counter”.

3. Materials and methods
According to experts, the most important impetus for the development of the industry in 2018 was the consolidation of the oil and fat industry in the national project “Export of agricultural products” as one of the key factors for the growth of total trade turnover until 2024 from $3,1 billion to $8,6 billion [1].

3.1. Sunflower market
According to Rosstat, the harvest of sunflower in 2018 amounted to 12,6 million tons, which was an absolute record for the industry. The largest increase and reserves are concentrated in the Central and Volga Federal districts. The record harvest of sunflower has allowed to load the processing industry, to produce a record amount of oil and again to update the record for exports, which, according to IAMC, will be 2,45 million tons [1].

According to IAMC experts, domestic oil consumption will increase slightly, although the trend of long-term stagnation remains. In 2018, this trend was reinforced by the introduction of a new technical regulation of January, 1, 2018. Against this background, imports of palm oil significantly increased, which in 2017/2018 agricultural year reached 934 thousand tons, which is 21% more than a year earlier [1].

3.2. Soya market
According to IAMC, in 2018 soybeans were sown on a record area – 2,78 million hectares, which is 141 thousand hectares more than a year earlier [1]. According to Rosstat, its harvest amounted to 3,9 million tons against 3,6 million tons in 2017. Experts note that the soybeans harvesting increased in Central (by 1,5 times) and Siberian (45%) regions [1]. Against this background, there was a decrease in the South (by 8%) and in the Far East (by 12%) [1].

More than 800 thousand tons of soybeans were exported from the Far East to China, which contributed to its record harvest in this region [1]. According to experts, this is an unprecedented volume of exports, showing the possibilities of Russia and China in this direction.

According to IAMC, soybean exports from Russia in the first three months of the 2018/2019 agricultural year reached 213 thousand tons against 158 thousand tons a year ago, 97% of exports were to China [1]. Soybean remains one of the most marginal and stable crops for agricultural producers in recent years which allows predicting further growth of its acreage. The soybean oil
market continues the trend of the past years: the oil successfully continues to advance to the markets of China, Algeria and India.

3.3. Rapeseed market
The rapeseed market is also establishing records. The record for acreage in 2018 – 1,58 million hectares (55% more than in 2017) was established mainly due to the Urals and Siberia, where crops expanded by 76% compared to 2017 [1]. According to Rosstat, in 2018, Russia harvested 1,98 million tons of rapeseed against 1,51 million tons a year earlier.

Experts explain the growing rapeseed popularity by increasing demand from processors and increasing exports, primarily to China.

Exports of Russian rapeseed oil, which reached the record 340 thousand tons last agricultural year, continue to grow at a faster pace [1]. Rapeseed meal and cake are in high demand in the domestic market. They are actively used in the animal husbandry.

3.4. The market of niche oilseed crops
In 2018, the markets of niche oilseeds (flax, safflower, ginger, mustard) developed in different directions: new records of acreage were set for oilseeds and mustard. The area under oilseed flax in 2018 increased by 31%, to 744 thousand hectares, under mustard – more than twice, to 337 thousand hectares [1]. Both markets are strictly export-oriented, with oilseed flax successfully sold to Europe, in recent years, exports to China and Vietnam have been growing. Mustard is also transported to Europe and Bangladesh by Russian exporters.

Areas under ginger and safflower decreased in 2018 to the lowest levels in the last 5-7 years – 80-85 thousand hectares of each crop were sown [1]. Low yields combined with low purchase prices compared to other oilseeds have devalued the value of these segments in farmers’ opinion.

According to IAMC assessment, taking into account the targets of the national project for the export of agricultural products, which are focused on the export of oils rather than raw materials, the segment of niche oilseeds in the coming years is likely to stagnate, losing the share in favor of three key markets (sunflower, soybean, rapeseed).

4. Result

4.1. Market conjuncture of vegetable oils in the Russian Federation and the Krasnoyarsk territory
The demand for vegetable oil is inelastic, since the oil belongs to the essential products and is traditionally used by households for cooking (table 1).

| Type of product | Average consumption per household member kg / person / year | Index of changes in prices for goods during the year, % | 2017 to 2016 | Elasticity coefficient (Ei) |
|-----------------|----------------------------------------------------------|--------------------------------------------------|--------------|--------------------------|
| Vegetation oil  | 13,7 13,9                                                | 91,4                                             | +1,46        | -8,6                     | [-0,169] |
| Russian Federation                                    |                                                       |                                                  |              |                          |
| Krasnoyarsk territory                                  |                                                       |                                                  |              |                          |
| Vegetable oil  | 11,7 11,2                                                | 105,11                                           | -4,27        | +5,11                    | [-0,840] |

*a Calculated by the authors on the basis of Rosstat and Krasnoyarskstat data

The level of the vegetable oil consumption practically does not grow per capita, which indicates to the market proximity to saturation. The increase is mainly due to the connection of non-traditional types of oils to the diet of Russians, as well as due to the expansion of product lines [4] (table 1).
Table 2. Saturation of the Russian market of vegetable oils, thousand tons\(^a\).

| Indicator                                      | 2016  | 2017  |
|------------------------------------------------|-------|-------|
| Stock availability at the beginning of the period | 226   | 977   |
| Local production                               | 5199  | 5734  |
| Import of products                             | 991,1 | 1005,2|
| Export of products                             | 2394  | 2999  |
| Availability of products at the end of the period | 48,9  | 43,4  |
| Market saturation                              | 3973,2| 4673,8|

\(^a\) Calculated by the authors on the basis of Rosstat data [5]

As a result, about 4.7 million tons of vegetable oil is the volume characterizing the level of the Russian market saturation in 2017 (table 2), indicating to the market expansion.

The first place in terms of consumption in Russia is traditionally occupied by sunflower oil [4]. This is followed by olive oil, the popularization of which was largely promoted by advertising and the media, and then – oils of other varieties [4]. Other types of vegetable oil are significantly less popular among Russian consumers [4]. However, we can talk about a gradual change in the trend, which is primarily influenced by fashion, the popularity of a healthy lifestyle and proper nutrition, as well as the Internet development. There is an increase in demand for linseed, mustard, rapeseed, ginger and other types of oil [4].

It is impossible to say that sunflower oil will lose the leader’s position. Consumption traditions, conservativism of Russian consumers, the formed stable demand, as well as the cost of oils produced from other varieties exert great influence [4] (table 3).

Table 3. The market capacity of vegetable oils\(^a\).

| Type of product | Consumption volume kg / person / year | Population number, million people | Coefficient of demand elasticity | Amount of products reserve, thousand tons | Alternative forms of needs satisfaction, thousand tons | Market capacity, thousand tons |
|-----------------|--------------------------------------|----------------------------------|---------------------------------|------------------------------------------|-------------------------------------------------------|-------------------------------|
| Russian Federation |                                       |                                  |                                 |                                          |                                                       |                               |
| Vegetable oil   | 13,9                                 | 146,8                            | 0,169                           | 2334,9                                   | 148                                                   | 6273                          |
| Krasnoyarsk territory |                                  | 2,9                              | 0,840                           | 58                                       | 16,4                                                  | 33                            |

\(^a\) Calculated by the authors on the basis of Rosstat [5] and Krasnoyarskstat [6] data in 2017-2018

According to the research of IndexBox Russia and calculations (table 3), in 2017, the volume of the vegetable oil market reached the value of 6273 thousand tons [4]. The main growth factors were the high yield of oilseeds (especially in 2016) and the production capacity increase implemented by vegetable oil producers [4].

Demand on the Russian market of vegetable oil is mainly satisfied by domestic production – 83.5% [4]. In the medium term, the growth of the vegetable oil consumption in Russia will average about 2% annually [4]. If the imported portfolio is also taken into account as other factors, the potential of the Russian vegetable oil market as of 2017 can be estimated at 16.2 million tons (table 4).
Table 4. Potential of the Russian vegetable oil market a.

| Categories of producers                          | The yield of oilseed crops, centner/ha | Sowing acreage, thousand/ha | Market potential, thousand tons (Ki*Mi*Ei)* Ci |
|------------------------------------------------|---------------------------------------|-----------------------------|-----------------------------------------------|
| Agricultural organizations                      | Ki                                    | Mi                          |                                               |
| Peasant (farmer) economies                      | 14,7                                  | 4373                        | 4693                                          |
| Personal subsidiary farms of the population     | 14,1                                  | 37                          | 38                                            |
| Import, thousand tons (Ci)                      |                                       | 1005                        |                                               |
| Market potential, thousand tons                 |                                       | 16240                       |                                               |

a Calculated by the authors on the basis of Rosstat data in 2017-2018 [5]

The current structure of the vegetable oil production by types is as follows: unrefined sunflower (53,3%), refined sunflower (25,7%), unrefined soybean (9,7%), unrefined rapeseed (6,2%), refined palm (1,7%), others (3,4%) [3]. Further development of the market will take place in the conditions of slow transition to work with non-traditional oilseeds for the domestic market, as well as the formation of the niche of flavored oils and oils with additives [3].

4.2. The efficiency of the oilseeds production and export in the Krasnoyarsk territory

In the Krasnoyarsk territory, agricultural producers began to actively include oilseeds in crop rotations, which indicates to the spectrum expansion of this variety use and adaptation to the natural and climatic conditions of the region. During the research period, the production of oilseeds was effective in 2014-2017, and in 2013 it was unprofitable (table 5).

Table 5. Economic efficiency of oilseeds production in the Krasnoyarsk territorya.

| Indicator                                      | 2013   | 2014   | 2015   | 2016   | 2017   |
|------------------------------------------------|--------|--------|--------|--------|--------|
| Prime cost 1 centner, roubles                  | 1096,8 | 961,8  | 1273,9 | 1442,9 | 1653,0 |
| Selling price 1 centner, roubles               | 1048,5 | 1002,7 | 1637,2 | 1899,0 | 1872,7 |
| Marketability, %                               | 32,9   | 85,3   | 75,8   | 68,4   | 64,0   |
| Profitability (unprofitability), %             | -4,6   | 4,1    | 22,2   | 24,0   | 11,7   |

a According to the collections of the agro industrial complex in the Krasnoyarsk territory for 2015-2018

The use of the calculation-design method made it possible to determine the more promising territories for the development of oilseed production in the Krasnoyarsk territory based on the grouping by harvesting area: Abansky, Krasnoturansky, Minusinsky, Nazarovsky, Rybinsky, Sukhobuzimsky, Sharypovsky districts.

Rapeseed has become one of the leading products among oilseeds in the Siberian Federal District (SFD) in terms of exports (table 6).

Table 6. Non-resource and non-energy exports by products (SFD)[7].

| №   | Code | Product | 2016 mln., dollars. | 2017 | 2018 | 2018 share, % | growth rate, % |
|-----|------|---------|---------------------|------|------|----------------|----------------|
| 26  | 1205 | Rapeseed | 11,0                | 55,5 | 66,2 | 0,4            | +10,7          | +19,3          |
Rapeseed occupies the 9th place in the structure of non-resource and non-energy exports of Russia in the Siberian Federal District and has a share of 35.2% in 2018 [7]. Export supplies are growing every year; rapeseed is one of the three most popular oilseeds in the world.

The Krasnoyarsk territory currently exports rapeseed to foreign markets, but the existing volumes of oil seed supplies are insignificant (less than 0.1% in total) and do not play a significant role in the structure of non-resource and non-energy exports of the region. The existing raw materials-oriented way of the region does not allow to get the maximum economic return from the produced rapeseed and is too dependent on external conditions [8].

5. Summary and conclusions
The rapidly growing demand for oilseeds on the world market causes an increase in its production and processing. The world market of oilseeds and vegetable oil tends to expand and diversify due to growing needs, geographical changes in commodity flows, new consumer preferences.

In order to gain and retain the leading position on the oilseeds market, it is advisable for the oil and fat industry enterprises of the Krasnoyarsk territory to implement: the development of modern production methods for oilseeds and their processing products; the development of distribution logistics; the constant research on creating products relevant to WHO (World Health Organization) and healthy lifestyle recommendations, etc.; the permanent expansion of the product range, product differentiation, and marketing positioning of products; the certification of products according to current international standards.

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