Production of organic products as a modern factor of food security

S P Plotnikova,$^{1,3}$ T V Kiyan$^1$, N B Mikheeva$^4$ and D I Kravtsov$^2$

$^1$Krasnoyarsk State Agrarian University, 90 Mira pr., Krasnoyarsk, 660049, Russia
$^2$Siberian Federal University, 79 Svobodny pr., Krasnoyarsk, 660041, Russia

$^3$E-mail: spplotnikova@mail.ru

Abstract. Ensuring food security for all countries of the world has always been a prerequisite for national independence and survival. The article discusses the features of the modern approach to ensuring food security, which involves taking into account not only the indicators of the physical provision of the population with agricultural products, their accessibility and compliance with the requirements of the law, but also indicators that reflect current trends in the people’s desire to improve the quality of their life. The authors substantiated the need to include indicators related to the production, sale and consumption of environmentally friendly products in the definition of food security. Based on the study of economic literature, legislative acts, and statistical sources, it was found that the production of environmentally friendly products for economically developed countries is an important criterion for assessing food security. During the research, it was identified that Russia, being a participant in the market of environmentally friendly products and possessing significant land and forest resources, huge reserves of clean water, has a small share of organic food in the total volume of food production. The study also found that the use of the proportion of certified organic food should be mandatory in assessing the performance of domestic agricultural producers as a factor in improving food security in Russia.

1. Introduction
Since January 2020, the new “Doctrine of Food Security of the Russian Federation” has been operating in the Russian Federation, which should become the basis of the country's socio-economic development. The implementation of this Doctrine should guarantee the citizens of Russia the physical and economic availability of food, and ensure the country's economy its food independence. At the same time, rational food consumption standards must be observed that contribute to an active lifestyle and good health.

According to this document, citizens of the Russian Federation should be provided with access to quality and safe products. Organic products can be considered in this case.

Providing the population with high-quality and safe food that meets environmental requirements is discussed in the section of the Doctrine "National Interests in Food Security." The most important condition of food security is the prevention of the production, sale and consumption of low-quality food products that can harm health.

The implementation of this condition is possible with the use of environmentally friendly raw materials, which requires improvement of existing federal quality standards and toughening the control of regulatory authorities over their compliance. It is important to regulate the quality and safety of food products at all stages of production from raw materials to the sale of finished products. The main
indicators of ensuring food security should meet the technical regulation requirements adopted by the EAEU member countries.

It should also be emphasized that in the adopted Doctrine, in the section “Strategic Goal: Main Tasks of Ensuring Food Security”, a mandatory line indicates the obligation to ensure food safety.

As one of the main directions of the state socio-economic policy in the field of food security, it is proposed to improve the mechanism of stimulating producers to produce food, agricultural raw materials that meet the requirements of environmental and veterinary surveillance and ensure a healthy lifestyle.

2. Literature review

The nature of consumer attitudes toward organic products has long been studied by economists. This problem is raised in the works of R. Cunningham [1], W. Tucker [2], J. Djokov and D. Keyner [3], later in the works of O. Ogeney [4]. As a result, when analyzing consumer attitudes towards environmentally friendly products, scientists distinguish 4 levels of loyalty:

- lack of loyalty (consumers who do not buy organic products belong to this level);
- low (restrained) loyalty (consumers who have hidden demand, which can be involved in consumption using the effective marketing mechanism belong to this level);
- average (inertial) loyalty (consumers who have a desire to purchase organic goods, but there is no obligatory emotional component for such purchases belong to this level);
- high loyalty (consumers who have a desire to purchase organic goods, and at the same time emotionally connected with their purchase belong to this level) [5].

The formation of a positive attitude towards organic products is facilitated by the growing popularity of a healthy lifestyle in the world. According to statistics, today 64% of the world population consider health as their main value. This interest in a healthy lifestyle has led to an increase in demand for environmentally friendly and organic products, turning their production into a profitable business [6].

But the popularization of a healthy lifestyle, “proper nutrition”, which contributes to health promotion and disease prevention, is not the only factor increasing the demand for organic products. The growth in demand for this group of products is facilitated by: the natural taste of organic products [7]; concern for the environment, the perception of the process of organic production environmentally friendly; understanding that environmentally friendly production improves animal welfare; the desire to support the regional economy, local producers, since to a large extent the production of environmental products is carried out at the local, regional level, often on small family farms, the quality of products of which customers trust; “fashion” of an ecological lifestyle and environmentally friendly consumption, which determines the high social status of consumers of organic products, etc.

But at the same time, despite the growing motivation for the consumption of organic products, there are constraints, as a result of which consumers, who have a generally positive attitude to environmental products, do not make a real purchase. Such factors include: consumer distrust in the quality of organic products, skepticism regarding certification and brand, low physical and logistic accessibility of organic products, inefficient marketing, lack of knowledge about the benefits of organic products, insufficient advertising, lack of attractive packaging, appearance of organic products often less attractive compared to regular products, high price level.

According to some studies, currently in the Russian Federation only about 1% of the population buy organic products. But at the same time, it is assumed that 10-17% of the citizens of our country will experience interest in environmentally friendly products in the next few years [5].

3. Methods of research

The main method used in this article is a monographic method based on the study of scientific economic literature on economic issues. The literature was analyzed, in which the problems of the realization of food security and the role of the development of the market for organic products in this process were raised. To analyze the information studied, economic-statistical, abstract-logical methods, system and
comparative analysis, and SWOT analysis were used. As a result, the existing indicators used to assess food security, proposed by Russian scientists and present in regulatory documents, were examined.

The aim of the study is to develop and propose a new indicator for assessing food security that meets the current economic conditions for its achievement, associated with an increase in demand for environmentally friendly food, ensuring not only the maintenance of vitality, but also the preservation and promotion of health.

4. Research and data

A person, among other things, is a very complex biological system and food security should ensure the normal functioning of people in this aspect. Moreover, this should happen to a greater extent due to the mainly domestic production of organic food. It is necessary to protect the domestic food market from dumping imports of substandard food products. It is necessary to produce such environmentally friendly products that would meet the standards developed by the Institute of Nutrition RAMS, WHO and world medical science in general.

The ability of the country's economy to provide the population with environmentally friendly and healthy products at affordable prices, regardless of the impact of negative external and internal conditions, while maintaining and improving the livelihood reflects a modern understanding of food security.

Today, for many countries, including Russia, the concept of food security is no longer associated with overcoming hunger. (Although for some states this problem remains relevant). In conditions when the shortage of food products has significantly decreased, the question of providing the population with environmentally friendly, organic products comes to the fore.

Naturally, food security also includes such traditional components as the physical (quantitative) availability of food, the affordability of food, food independence and autonomy (the ability of the national economy to fully satisfy the population’s needs for food), reliability, (minimizing the impact of negative factors related to weather conditions, seasonality, changes in the political situation and other factors for food supply), sustainability (expanded food reproduction).

The priorities in solving the food problem are changing in the direction of improving the quality, safety and environmental friendliness of food. According to scientists of the All-Russian Institute of Agrarian Problems and Informatics named after A.A. Nikonova, the threshold values of food security (which means the proportion of national food in the gross volume of food consumed) for almost all groups of food products, such as grain, vegetable oil, fish products, potatoes in Russia have already been achieved [8]. But the question of the quality and environmental friendliness of this product, its compliance with the preservation of health, remains unresolved.

The new Doctrine of Food Security, adopted in Russia, again suggests using threshold values as criteria for determining the concepts of food independence (which are calculated as a percentage of the volume of agricultural products produced by national agricultural enterprises to the total volume of its consumption in the domestic market), as well as achieving physical and price (economic) accessibility of food, compliance of food quality indicators with the requirements of technical regulations of the Eurasian Economic Union. It is worth noting that the number of types of food products for which thresholds are set has expanded in the new Doctrine.

However, among the listed indicators there are no indicators of environmental friendliness of food, indicating the possibility of its assignment to the class of organic products. The level of compliance of the product itself and its production with the current interstate and national standards in the field of environmentally friendly (organic) products in Russia, confirmed in the certification process is proposed as an indicator. The specific gravity of certified organic food is proposed to be made an indispensable element of food security in Russia. The threshold value of this indicator in the next decade should be at least 10% and should increase in the future.

Around the world, the share of organically pure products is from 5 to 15% of the total supply of certain food products. The volume of the global market for environmentally friendly products has grown by almost 5 times over the past two decades (in 2004 it amounted 21 billion euros, and in 2017 - 97
billion euros). At the same time, the growth rate of demand for environmentally friendly products was almost 2 times faster than the growth in global food production in general. The expert community assumes that in 2020 its volumes will reach $143 billion.

About 1% of the global agricultural land is occupied by organic production, the number of ecological farms is growing rapidly. In 2017 the land area of organic farms increased by 20%. Organic food sales are also steadily increasing. The US is the leader in this growth, where the market for organic products is 40 billion euros, followed by Germany (10 billion euros) and France (7.9 billion euros) [9].

These include the long-term (extensive) traditions of agricultural production, the presence of significant areas of agricultural land, and the low level of intensification and chemicalization of the agro-industrial complex in comparison with industrialized countries. So, for example, on average in the countries of the Eurozone, the fertilizer application is 192 kg per hectare, while in Russia - 39. This happened as a result of the fact that for a long time, agriculture did not have enough financial resources for the purchase of synthetic mineral fertilizers, pesticides, seeds for the production of genetically modified products. As a result, Russian agricultural technologies have become environmentally friendly and suitable for the production of organic products.

According to data cited by the executive director of the Union of Organic Agriculture of Russia R. Gurov, in our country there are 40 million hectares of fertile agricultural land that has not been fertilized for more than 20 years. As a result, its use can ensure the production of organic products. This is comparable to the area of all the organic lands of the world combined, which is 43.1 million hectares.

As a result of economic reforms of the nineties in Russia, a significant amount of agricultural land was unclaimed and transferred to the category of fallow lands. For nearly thirty years, such lands have not been treated with pesticides, and inorganic mineral fertilizers have not been applied to them.

Areas far from industrial centres suitable for the collection and processing of wild berries and herbs, mushrooms, nuts, honey, now allow us to produce products that are in great demand on the world market and meet the concept of environmentally friendly products.

Russia's most important long-term advantage in the production of organic agricultural products is its huge reserves of fresh water: 4508 cubic km, which is twenty percent of its world reserves.

A legislative base is also being created in Russia, which should become the basis for the development of the production of organic products. В начале августа 2019 года президент РФ В. В. Путин подписал декрет о введении в действие закона “О Пищевой безопасности”, which came in force on January 1, 2020. The Ministry of Agriculture of the Russian Federation almost simultaneously prepared a draft law “On Organic Agriculture, Raw Materials and Food.” This law should come in force on January 1, 2021.

The production and export of organic agricultural products can become a possible, progressive and promising direction of agricultural development in the Krasnoyarsk Territory. This is due to the presence of a vast territory, i.e. significant land resources and therefore great potential for the development of organic farming. In Russia, the area of the Krasnoyarsk Territory takes the second place after the Republic of Sakha (Yakutia). In the Krasnoyarsk Territory, there are all the prerequisites for the production of environmentally friendly products (including "organic") - clean land, air, water.

Today, there is practical interest in the development of ecological agricultural production in the Krasnoyarsk Territory. Some aspects of the development of ecological agricultural production have already been paid attention to at the Siberian Agro-Industrial Forum in 2017.

The cooperation of the established agricultural holding Ogorod with scientists from the Krasnoyarsk State Agrarian University is aimed at developing and implementing a system for the production of organic food: carrots, beets and potatoes. More than 10 agricultural enterprises of the region supported the idea of creating a cluster of organic products, including production, procurement and processing companies. The creation of such a cluster is actively supported by the administration of the Krasnoyarsk Territory, business communities, scientific and educational institutions, including the Krasnoyarsk State Agrarian University, which has experience in the scientific support of transitions of producers from intensive agricultural technologies to organic ones.
The coordinator of the cluster of food-organic producers in the region is the Business Development Agency. Krasnoyarsk Territory has developed support measures for agricultural producers developing this area of food production and sale both domestically and abroad. Manufacturers of organic products return part of the costs of their certification. The issuance of a certificate of conformity giving the right to name crop products “organic” is supported by the state not only with financial instruments, but a special brand name “Green Snowflake” with the signature of Siberian organic was developed for better recognition and advertising of local organic products.

In a report by A. Gramatunov, General Director of Business Development Agency and Microcredit Company JSC, at a round table on the development of organic production by agriculture and forestry (gathering and processing of wild plants), it was noted that the Russian Federation could become a world leader in the production of such type of food, also through organic food resources of the Krasnoyarsk Territory.

5. Conclusions
The study and analysis of data on food security and the development of organic production allowed us to draw the following conclusions:

First, in modern conditions, food security is an integral element of the economic and national security of the state, the basis of its sustainable socio-economic development. The Food Security Doctrine affirms the need to provide the population with quality and safe food. Organic products meet these requirements.

Secondly, in modern scientific economic literature, considerable attention is paid to the issues of consumer attitudes towards environmentally friendly, organic products.

Thirdly, food security today cannot be ensured by the achievement of threshold indicators for providing the population with domestic food, its physical and economic affordability.

Fourthly, as an additional indicator of food security, the specific gravity of certified organic food in its total volume is proposed. A mandatory element of the realization of food security should be the establishment of a threshold value for this indicator.

Fifthly, the production and consumption of organic products in the world economy is an important trend in its modern development. Russia has all the necessary and sufficient conditions for the development of organic production and as a result of strengthening its food security.

Sixth, in the Krasnoyarsk Territory, there is considerable interest in the production of environmentally friendly and organic products from both entrepreneurs and investors.

Based on the conclusions made, it is possible to state the prospects and possibilities for implementing the Food Security Doctrine in the field of production of environmentally friendly and organic products.

Reference
[1] Cunningham R M 1961 Customer loyalty to store and brand Harvard Business Review Harvard Business Review 39(6) 127-37
[2] Tucker W T 1964 The development of brand loyalty Journal of Marketing Research 1(3) 32-5
[3] Jacoby J and Kyner D B 1973 Brand loyalty vs. repeat purchasing behavior Journal of Marketing Research. 10(1) 1-9
[4] Ogenyi O 2007 Customer satisfaction and loyalty to British supermarkets Journal of Food Products Marketing 13(2) 19-32
[5] Yrosh O B and Mitina E A 2020 Market of organic products in regions: distribution channels and development strategy Economy of region 16(1) 41-156
[6] Pearson D 2002 Marketing organic food: Who buys it and what do they purchase J. Food Australia 4(1) 31-4
[7] Smith-Spangler C, Brandeau M and Brandeau L 2012 Are organic foods safer or healthier than conventional alternatives? A systematic review Annals of Internal Medicine 157(5) 348-66
[8] Borodin K G 2018 Economic Access to Food: Factors and Methods of Assessment HSE Economic Journal 22(4) 562-82
[9] Plotnikova S P, Kiyan T V and Ermakova I N 2019 The problems of organic products market development *Journal of Economy and entrepreneurship* 13(8) 1099-102