

Strategic guidelines for ensuring food security in the Sverdlovsk region

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Abstract. Ensuring the food security of the Russian Federation includes a set of areas in the implementation of which the constituent entities of the Russian Federation are involved, taking into account economic opportunities, natural and climatic conditions of the regions and other circumstances that are important for obtaining positive results in the field of ensuring food security. In connection with the foregoing, the topic of this scientific article is relevant both from a theoretical and practical point of view. The scientific novelty of the study is associated with an in-depth economic analysis of food security in the Sverdlovsk region, taking into account the regulation of regional legislation. The purpose of the study is to identify the interaction of economics and law in the field of ensuring food security of a constituent entity of the Russian Federation in the context of indicators of the Doctrine of Food Security of the Russian Federation. The objective of this study is to assess the impact of the norms of the regional law "On Ensuring Food Security of the Sverdlovsk Region" on the development of agriculture and agro-industrial production in the Sverdlovsk Region in terms of ensuring food security of the constituent entity of the Russian Federation. The theoretical significance of the work is due to the fact that the obtained results and conclusions develop and supplement a number of sections of the agrarian economy in terms of assessing the impact of agriculture on ensuring food security. The practical significance of this study is characterized by the possibility of using the material by the authorities of the constituent entity of the Russian Federation, as well as the subjects of agricultural activity and in the educational process at an agricultural university.

1 Introduction

To identify the state of ensuring food security with agricultural products produced in the Sverdlovsk region, it makes sense to analyze the indicators of production and economic activities in agriculture and the agro-industrial complex as of 2021.

General information (according to statistics) on agricultural organizations of the Sverdlovsk region:

- more than 300 agricultural organizations;
- about 700 peasant (farmer) households, including individual entrepreneurs;

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- more than 443.3 thousand citizens leading personal subsidiary farms and other individual farms;

- more than 800 food and beverage companies.

As of January 1, 2021, there are 54 agricultural consumer cooperatives in the Sverdlovsk region:

- 4 serving;

- 31 supply and marketing;

- 5 credit; -14 processing.

The food and processing industry includes 11 industries, employing more than 22,000 people. These are the meat industry, dairy, baking, oil and fat, confectionery, flour and cereals, fruit and vegetable canning, brewing, non-alcoholic, fish processing and tobacco industries.

2 Materials and Methods

For the results of the study, the article uses a statistical method to analyze data from the federal and regional levels in the food supply system of the Sverdlovsk region. Methods of analysis and synthesis are used when comparing threshold values of food security in the region and standards. The method of comparative analysis was used by the authors in the conclusions when summarizing the problems and prospects for improving the development of the agrarian complex of the region.

3 Results and Discussion

In order to provide indicators on the volumes of consumption of basic foods that meet the criteria for assessing food security, we present the recommended volumes of food consumption (on average per year) per person per year.

Table 1. Recommended volumes of food consumption (average per year) per person per year.

Product groups	Recommended Volumes
bakery and pasta products in terms of flour, flour, cereals, legumes, total	95-105 kg/year/person
including wheat flour enriched with micronutrients	30-40 kg/year/person
potato	95-100 kg/year/person
vegetables and gourds	120-140 kg/year/person
fruits and berries	90-100 kg/year/person
meat and meat products, including:	70-75 kg/year/person
beef	25 kg/year/person
mutton	1 kg/year/person
pork	14 kg/year/person
bird	30 kg/year/person
milk and dairy products in terms of milk, total	320-340 kg/year/person
Including enriched with micronutrients from them:	70-100 kg/year/person
milk, kefir, yogurt with a fat content of 1.5-3.2%	60 kg/year/person
milk, kefir, yogurt with a fat content of 0.5-1.5%	50 kg/year/person
animal butter, fat cottage cheese	4 kg/year/person
curd with a fat content of less than 9%	9 kg/year/person
sour cream	9 kg/year/person
cheese	6 kg/year/person
eggs	260 pieces
fish and fish products	18-22 kg/year/person
sugar	24-28 kg/year/person

vegetable oil	10-12 kg/year/person
salt	2,5-3,5 kg/year/person

*Recommended amounts of food consumption are calculated based on their use, including for the production of food, dishes and drinks.

These tables show strategic guidelines in the field of nutrition of the population, which will require the need for the volume of agricultural products that need to be produced by agricultural entities.

Taking into account the fact that self-sufficiency in meat and meat products, based on the norm of consumption of meat and meat products in the Russian Federation 70-75 kg per person per year, at least 700 thousand tons of livestock and poultry meat in live weight should be produced for the population of the Sverdlovsk region. In connection with these indicators, 2021, obviously, does not provide a food security threshold, which objectively requires an increase in economic results in the field of beef and poultry farming. It is necessary to develop beef cattle breeding, to increase the number of pigs, sheep, horses, rabbits and other livestock. In addition to growing broiler chickens, it is necessary to organize the production of meat from ducks, geese, turkeys, guinea fowls and other breeds of birds.

The population of the Sverdlovsk region as of 01.01.2021 is 4290.1 thousand people. Taking into account the recommended volumes of consumption of milk and dairy products in terms of milk 320-340 kg per person per year, it is necessary to produce about 1.5 million tons of milk. The actual milk production for 2021 clearly does not provide food security indicators for this type of agricultural product.

In recent years, the milk yield per cow per year has increased significantly (from 6616 to 8085 kg/year). However, the number of cows in the Sverdlovsk region is growing at a slow pace, especially since there is a noticeable decrease in the number of cows in private farms.

Grain in the Sverdlovsk region is mainly suitable for fodder for farm animals and poultry, as it does not meet the requirements for use in the baking industry due to the low quality of flour in terms of gluten and others. In Canada and other grain-producing countries, it is considered the norm for grain production to be 1,000 kg per person per year, which provides a food security threshold for the state.

Everything that is produced from above is exported or to increase the number of farm animals and birds. Taking into account the population of the Sverdlovsk region, as of January 1, 2021, the volume of grain production clearly does not meet the criterion of food security.

At the same time, it should be noted that 60-80 thousand tons of grain that can be used to obtain flour for baking is produced in the Sverdlovsk region, when the region purchases 240-250 thousand tons of flour for baking in other regions of the Russian Federation.

In 2021, there was a decrease in the volume of potato production, the reasons for which were: natural and climatic conditions, a decrease in the number of agricultural organizations involved in the cultivation of potatoes and personal subsidiary plots of the rural population.

The level of self-sufficiency in potatoes for the population of the Sverdlovsk region in 2021 amounted to 96.8%, which corresponds to the indicator of the Food Security Doctrine, but with a small margin.

At the end of 2021, there was a decrease in vegetable production in all farms, including household plots. In general, in the Sverdlovsk region, the level of self-sufficiency in vegetables amounted to 38.6%, which does not correspond to the Doctrine's indicator (90%).

The reasons for this situation is the lack of seeds of carrots, beets, cabbage and other crops that must be purchased by import, which is difficult for domestic agricultural producers in the conditions of the crisis on the world market. The lack of high-quality seeds

also affects the volume of vegetable production in personal subsidiary farms of the population in rural areas. As for the production of greenhouse vegetables, here, in addition to imported seeds, the main factor is the lack of heated greenhouses.

In the Sverdlovsk region, the Teplichnoye Joint-Stock Company, which is part of the UMMC-Agro agricultural holding, is operating, and it is planned to develop activities for the production of greenhouse vegetables in other farms, but this circumstance does not yet solve the problem of vegetable production.

Egg production volumes for 2021 decreased, but the food security indicator in terms of self-sufficiency in eggs and egg products remains 100.2%.

Out of 1305.4 thousand hectares of arable land in 2021, 813.8 thousand hectares were sown. This means that 491.6 thousand hectares of agricultural land have been withdrawn from agricultural production for various reasons. Construction of cottages by settlements, overgrowing with trees and shrubs, swamping and other types of degradation of arable land in the composition of land. It is not difficult to calculate how much grain and other crops could be grown on the former fields, which would actually increase the food security indicators of the Sverdlovsk region.

Since the beginning of the nineties, the number of cattle has decreased significantly. So, cows in farms of all categories totaled up to 350 thousand heads.

The total milk yield reached 1.5 million tons per year. Despite the increase in the productivity of cows, in general, the existing number of cows does not provide the required volume of milk. To increase the volume of milk production, an appropriate material base is needed. Today, dairy farms are switching to robotization of technological processes and introducing digitalization, which makes it possible to organize milk production in the context of the intellectualization of modern agriculture.

African swine fever has become a serious problem holding back the growth of the pig population in recent years. Only in 2021, due to ASF, a large number of pigs were forced to be slaughtered in private household plots of the Sverdlovsk region and in small farms. Solving the problems of ensuring food security objectively requires the availability of the required amount of agricultural machinery for work in field crops and equipment, including for servicing the livestock sub-complex. For many years in the agriculture of the Sverdlovsk region, agricultural producers were forced to use old tractors, combines and other agricultural machinery and equipment.

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In the system of measures to ensure sustainable production of agricultural products and food, state support for agricultural producers is of decisive importance. From the regional budget, finances are annually allocated for state support of agricultural production, which makes it possible to influence the provision of food independence of the constituent entity of the Russian Federation and to organize agricultural activities in a sustainable manner to produce the necessary volumes of agricultural products and food for the needs of the Sverdlovsk region.

The main investor in the agro-industrial complex is the consumer of agricultural products and food products. To meet this challenge, economic accessibility and physical accessibility of food play a decisive role.

Economic accessibility is expressed in the availability of the necessary amount of money for the population to purchase food all year round. Sources of receipt of funds are wages and other income from business and other activities and budgetary funds received from work in budgetary organizations and institutions, as well as pension payments.

In ensuring the physical availability of food, trade (shops, markets, fairs and other forms) and public catering (restaurants, cafes, canteens and other forms) are of decisive importance. For the sustainable and cost-effective functioning and development of regional agriculture and the entire agro-industrial complex, strategies and programs are of great importance, as a result of which the food security of the Sverdlovsk region is ensured.

Legal regulation of the direct provision of food security in the Sverdlovsk region is carried out by the regional law "On ensuring food security in the Sverdlovsk region No. 6-03 dated January 31, 2012 (with amendments and additions).

In terms of legal force, the regional law has priority in comparison with the strategies and programs adopted in the Sverdlovsk region. At the same time, it should be taken into account that the production indicators of the main types of agricultural products, established in the regional law of January 31, 2012, do not meet the criteria for ensuring food security, defined in the Food Security Doctrine of the Russian Federation of January 21, 2020.

In order to identify the provision of food security for agricultural products and food produced in the Sverdlovsk region, it makes sense to analyze what tasks the Regional Law No. 6-OZ of January 31, 2012 sets in this regard in the context of the Food Security Doctrine of the Russian Federation.

Table 2. Forecast threshold indicators for ensuring food security established in the regional law and indicators of the Food Security Doctrine of 01/21/2020

Production indicators predicted in the regional law of the Sverdlovsk region No. 6-OZ 31.01.2012	Production indicators established by the Food Security Doctrine of the Russian Federation dated January 21, 2020
<ol style="list-style-type: none"> 1. Meat and meat products (in terms of meat) - at least 72% by 2030, including poultry meat at least 80%. 2. Milk and dairy products (in terms of milk) at least 80% by 2030. 3. Eggs - at least 100%. 4. Potato not less than 100%. 	<ol style="list-style-type: none"> 1. Grain - not less than 95%. 2. Sugar not less than 90%. 3. Vegetable oil - at least 90%. 4. Meat and meat products (in terms of meat) - at least 85%. 5. Milk and dairy products (in terms of milk) - at least 90%. 6. Fish and fish products (in live weight of raw materials) - not less than 85%. 7. Potato - not less than 95%. 8. Vegetables and melons - at least 90%. 9. Fruits and berries - at least 60%. 10. Seeds of the main agricultural crops of domestic selection - at least 75%. 11. Edible salts - at least 85%.

As can be seen from the table, the predicted threshold indicators for ensuring food security, established in the regional law No. 6-FZ of January 31, 2012, diverge from the indicators of the Doctrine of January 21, 2020.

Firstly, not all threshold indicators are taken into account, which indicates the lack of strategic planning for the development of agriculture and agro-industrial production in the Sverdlovsk region. Secondly, not an integrated approach to solving the problem of providing the population of a constituent entity of the Russian Federation with agricultural products and food of domestic production.

It is clear that in the conditions of the Middle Urals it is problematic to ensure the production of fruits, melons and other exotic crops. The subject is forced to purchase fish and fish products, as well as salt, sugar and other food products in addition to aquaculture.

At the same time, the regional agro-industrial complex, taking into account natural and climatic zones, can organize the production and economic activities of agricultural producers, ensuring the production of agricultural products, raw materials and food in volumes that ensure food security and food independence of the region.

Obviously, in order to correct the situation, and in order for the regional law to really be an effective legal basis for organizing agricultural activities that ensure food security in the Sverdlovsk region, it is necessary to make changes and additions to this regional law in terms of:

1) Ensuring the growth of indicators for the production of agricultural products, raw materials and food produced in the Sverdlovsk region in accordance with the indicators of the Food Security Doctrine of the Russian Federation.

2) Elimination or minimization of risks and threats in the field of regional agriculture.

3) Ensuring the quality and safety of food products produced in the Sverdlovsk region.

4) in the field of development of production of certain types of material and technical resources for regional agriculture in the region.

Considering that there are no special laws on the development of agricultural science and agricultural education in the Sverdlovsk region, it is advisable to introduce appropriate norms regulating relations in terms of the development of fundamental and applied scientific research in the field of agriculture in order to develop new types, varieties and hybrids of crops, breeds, types and crosses of animals and birds. And also in the field of intellectualization of regional agricultural production.

In order for agriculture and agro-industrial production to sustainably ensure food security, a new approach is needed to develop a system of training, advanced training and retraining of personnel capable of realizing the necessary competencies in the field of innovative development of agriculture and fisheries on the basis of knowledge in the context of ongoing transformations in the Russian agricultural sector.

It should also be noted that the military actions of Russia in Ukraine were not included in the system of risks for domestic agriculture and the agro-industrial market, and therefore it is urgent to develop specific measures to transform agrarian relations in the current conditions, allowing to ensure food security and food independence of the country.

In the Sverdlovsk region, the regional law "On Ensuring Food Security of the Sverdlovsk Region" has been adopted, and other regulatory legal acts regulating the safety of food products produced in the Sverdlovsk region are also in force.

4 Conclusion

Ensuring the quality and safety of food products produced in the Sverdlovsk region is a problem that requires an integrated approach to its solution. In the complex of tasks aimed at ensuring the quality and safety of food products, the greening of agricultural production and its transition to organic farming, obtaining livestock products from organic agriculture, are distinguished, first of all.

The organization of agro-industrial production on the principles of a "green" economy, in addition to solving environmental problems, directly has a positive impact on the quality and safety of agricultural products, raw materials and food, since the use of synthetic chemicals and the negative impact of agro-industrial waste on the safety of agricultural products will be minimized.

Currently, in the agrarian sector of the economy of the Sverdlovsk region, a situation has developed when, along with specialized processing enterprises and organizations from raw materials, the manufacture of finished food products is carried out by agricultural producers themselves. Almost all poultry farms have processing structures and a network of company stores for the sale of food and poultry meat. In some large farms, milk is

processed and packaged. At the same time, meat processing plants and dairy plants, and other processing organizations use meat, milk powder and other types of raw materials and imports in their production. This situation creates tension in the domestic agro-industrial market due to the monopoly of the processing sector, does not contribute to the effective development of domestic agriculture and does not guarantee the quality and safety of food products supplied to the population of the Sverdlovsk region.

In order to ensure stable management of the production processes, processing and sale of agricultural products, raw materials and food produced in the Sverdlovsk region, it is necessary to solve the following tasks:

- transition from chemist - technogenic intensification of agriculture to natural-evolutionary;

- increasing the species and genetic diversity of cultivated species of plant varieties, as well as their adaptive placement in time and space in order to better use the bioclimatic potential of each agricultural zone and locality;

- expanding the scale of the adaptive system of plant breeding based on a combination of high potential productivity of varieties;

- ensuring the phytosanitary well-being of agronomic systems through the use of varieties and hybrids resistant to harmful species, as well as managing the population dynamics of useful and harmful organisms;

- transition to a new strategy for protecting plants from diseases, pests and weeds based on managing the dynamics of their population and environmentally acceptable damage through the focal use of pesticides, the widespread use of biological methods of protection;

- carrying out sanitation of soils, primarily in areas with an extremely dangerous level of pollution, as well as in the territories of gardening, gardening and country associations of citizens;

- conducting regular environmental monitoring in agricultural enterprises and organizations located in the areas of industrial enterprises;

- identification of agricultural land areas with increased levels of contamination with heavy metals, radionuclides, fluorine, followed by their introduction from crop rotation or placement of non-forage crops on them;

- when placing new productive forces, take into account the environmental factors of the territories;

- reducing the intake of radionuclides, heavy metals and other toxic substances (primarily the content of ZN, Cd, Pb, F, 90 Sr) into the organisms of animals and birds with vegetable feed using radioprotectors, especially from natural minerals (diameters, glauconites, flasks,);

- improvement of agricultural enterprises from infectious diseases of animals.

Therefore, the urgency of the problem of food safety is increasing every year, since it is the safety of food raw materials and food products that is one of the main factors determining people's health.

Innovative activity in the region's agriculture is developing thanks to state support. Most of the investments are intended for the construction of dairy complexes, for the renewal of the agricultural machinery fleet, and for the reconstruction of production facilities. Funds are also allocated for grant support to farmers.

Much attention is paid to tribal organizations. Currently, there are 43 breeding organizations in the Sverdlovsk region, where black-and-white cows are bred. In these organizations of the region there are 278 cows - record holders with a milk yield of 14 to 17 tons of milk per year. That's pretty good genetic potential. Therefore, the further development of livestock breeding will ensure the food security of the region. Since 2019, bovine embryo transplantation has been introduced in breeding organizations. This allows you to get more offspring from genetically valuable animals. Since 2020, this method has

been used at three breeding plants - LLC Novopyshminskoye, LLC People's Enterprise Iskra. At the exhibition "Golden Autumn - 2020" for high performance in the field of livestock breeding, the Sverdlovsk breeding enterprises JSC "Kamenskoye", SEC "Kilachevsky", LLC "Novopyshminskoye" were awarded a gold medal.

Despite the difficult financial situation in 2022, dairy farms continue to be built and modernized in the Sverdlovsk Region, and the fleet of agricultural machinery is being updated. The implementation of the program "Integrated Development of Rural Territories" continues.

An important condition in solving the food security of the region is the improvement of the social sphere of the village. The main thing is to maintain a stable level of production, periodically equipping agricultural enterprises with technological equipment and building up human resources. With the introduction of digitalization in agriculture, the shortage of specialists in this industry is felt most strongly.

As part of import substitution, cheese making is developing in the region. For example, in Verkhnyaya Pyshma goat cheeses Camembert, Valence and others are produced.

Federal retail chains are also betting on the recognition of local brands. The share of Sverdlovsk suppliers of agricultural products is more than 35%. Cooperation with local suppliers allows retail chains to receive fresh products at relatively low prices.

For the food independence of the Sverdlovsk region, it is necessary to fully provide itself with potatoes and chicken eggs, provide the region with meat by 60%, at least 70% should be provided with milk and approximately 45% with vegetables.

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