Development of the Food Security System

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Abstract: The system of national food security is considered as a controlled formation in the infrastructure of the national economy of the country under state supervision and management. The main task of the system is to ensure the food security of the state. According to the state policy in the field of food, the population is provided with guaranteed physical and economic access to food products in volumes not lower than the medical norms of daily consumption, in sufficient quantities to ensure a healthy life. The management of the national food security system by the state authorities involves the timely adoption of measures to improve the country's agricultural policy on legal and financial support for agricultural producers, defending their interests in the food market, and strengthening the material base of agricultural business. National food security is a global macroeconomic problem within the state. Therefore, the state management of the food supply system involves legislative, economic, scientific and informational support for it. Guaranteed provision of food to the population is the most important task of the state in the field of national security.

1 INTRODUCTION

The national food security system is a multidimensional macroeconomic structural formation that requires an appropriate specific management mechanism, involving the development and application of special organizational, economic, scientific, technical, informational, and other measures, necessary to ensure the balanced operation of all components of the system of industries in various situations both in the regions and at the country level. One of the main tasks of food security management is to ensure the guaranteed sustainable functioning of the entire system, ensuring the production of its own agri-food products in the necessary volumes in any situation. The management of the food security system involves the use of modern management methods and indicators that characterize the guaranteed food supply of the country. The management system requires a timely response to meet the increasing demand for various food products. The main place in the nutrition of the population is occupied by agricultural products, which causes the adoption of priority measures for state support of the agro-industrial complex. The agricultural sector acts as a source of food resources and predetermines food security.

2 RESEARCH METHODS

The research methods are based on traditional scientific methods using system analysis, the formulation of a scientific hypothesis of the food supply system, methods of a rational combination of industries, methods of analyzing the economic research of agricultural production, the place and role of public administration in the system of national food security, as well as the works of Russian scientists, researching food safety.

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3 RESEARCH RESULTS

The administrative activity of the state in the formation of food resources is revealed; the main tasks of increasing food are identified, directions for increasing the production of food products, increasing purchases of agri-food products are formulated. The dynamics of agricultural production reflecting the main base in the system of agri-food products is studied during the research on the formation of food resources; the structure of the total volume of activity of agricultural producers in Russia reflecting the share of agricultural products in the food supply is generalized; the features of agricultural producers' activities in the formation of agri-food resources are revealed. One of the activities of administrative structures in the food supply system is the formation of food products for the national food security of the country, ensuring the stability of the State.

4 DISCUSSIONS

Guaranteed provision of the country's population with food products is the most important component in the national security system of the State. With a full-scale food supply, the entire population of a particular country at any time should have physical and economic access to purchase food in sufficient quantities according to medical nutrition standards to ensure active work and normal life. Every state strives to ensure that every person has access to high-quality and non-hazardous food products. In this regard, the governments of all countries consider the problem of reliable food security among the top priorities.

Since the main producer and supplier of food products is agriculture, one of the leading topics in the work of the government is the agrarian policy aimed at the progressive development of the agricultural sector, as well as the capacity of the industry for processing agricultural products and raw materials. The economic policy of the State is also adjusted to this direction, designed to form and coordinate the vector of the organizational and economic orientation of promoting financial, material, and technical resources on a large scale for the development of the country's food system. Due to the fact that the consumption of food products is a continuous process, the functioning of the food supply system must be guaranteed to be sustainable, ensuring expanded reproduction and the flow of food products without interruptions. One of the central places in the production of agricultural products is the availability of labor resources in rural areas. From 1990 to 2020, the rural population in Russia decreased from 38.9 to 37.2 million people, or by 4.4%. At the same time, the share of the rural population in the total number of the country decreased from 26.4 to 25.3%, or by 1.1 percentage points (Table 1).

Table 1: Dynamics of the structure of the permanent population in Russia, at the beginning of the year, million people.

Years	Net share	including:	
		rural	share, %
1990	147.7	38.9	26.4
2000	146.9	39.5	26.9
2010	142.8	37.8	26.4
2020	146.7	37.2	25.3
2020 in % to 1990	99.3	95.6	1.1 p.p.

Source: Agro-industrial complex of Russia in 2019, Moscow, 2020.

A well-functioning food supply system should ensure that every citizen of the country and any social group of the population is provided with physical and economic access to purchase sufficient quantities of safe food to meet their needs in accordance with medical consumption standards.

The food supply system of the state should be built in such a way as to have autonomy and economic independence, to guarantee the national full-scale food security of the country's population, regardless of the impact of weather and climatic factors, to develop according to the type of expanded reproduction. Effectively operating food supply system carries out a set of measures aimed at solving problems of developing agricultural production, organizing foreign trade, ensuring reliable storage and timely deep processing of agricultural products and raw materials. From 2016 to 2019, the nominal volume of produced gross domestic product in Russia in market prices increased from 85,616.1 to 110,046.1 billion rubles, or by 28.5%. At the same time, the gross value added in basic prices for the period under review increased from 77,077.1 to 98,646.4 billion rubles, or by 28.0%, of which the share of agriculture, hunting, and services in the gross value added of the Russian economy amounted to 3.4%.

An effective food supply system involves the fair distribution of basic food products, as well as the development of the socio-economic infrastructure of the rural territory. Food security can be determined by taking into account the consumption of calories per individual permanent resident of the country per day, taking into account the budget availability of each

family. The main constituent factors of food security are availability, accessibility, and consumption of food. The availability of food products is evidenced by the growing production of agri-food products. Thus, in 2019, per capita production in Russia increased compared to the previous year as follows: grain by 55 kg, vegetables by 3 kg, livestock and poultry by 2 kg, milk by 6 kg, egg production is growing, and potato production decreased by 2% (Table 2).

Table 2: Dynamics of agricultural production per capita in Russia.

Name	Years				2019 to 2018	
	2016	2017	2018	2019	%	+, -
Grain, kg	823	923	771	823	107.1	55
Potato (kg)	153	148	153	150	98.0	-3
Vegetables, kg	90	93	93	96	103.2	3
Livestock and poultry for slaughter (in slaughter weight), kg	67	70	72	74	102.8	2
Milk, kg	203	206	208	214	102.9	6
Eggs, pcs	297	305	306	306	100.0	0

Source: Agro-industrial complex of Russia in 2019, Moscow, 2020.

The increasing production of agricultural products and the progressive sustainable operating of the agricultural sector in Russia allow providing the country's population with access to food.

To study food security, the system of providing food products to the people in the world community of states and countries of various levels of economic development uses indicators of malnutrition, data on the world's population, and estimates food losses in the trading system in each country. Along with this, the person's dietary energy supply, food production, food prices, food costs, and food system volatility are taken into account. The most common factors of malnutrition are emergencies, climate shocks, droughts, floods, wars, political upheavals, and state economic policies.

Agricultural production is highly vulnerable to drought. The consequence of the lack of food security in households is stunted growth and emaciation in children, and underweight. The lack of food security in the country is evidenced by the lack of economic access of residents to food. The analysis of food consumption per capita per year in Russia shows that in 2019, compared to 2016, the consumption of bread and bread products decreased by 0.9%, potatoes – by 1.1%. At the same time, during this period, the consumption of vegetables increased by 6 kg, meat by 2 kg, milk by 3 kg, eggs – by 1 kg, vegetable oil – by 0.3 kg. Consumption of sugar remained unchanged - 39 kg (Table 3).

Table 3: Trend of annual food consumption per capita in Russia.

Indicators	Years				2019 to 2016	
	2016	2017	2018	2019	%	+, -
Bread and bakery products, kg	117	117	116	116	99.1	-1
Potato (kg)	90	90	89	89	98.9	-1
Vegetables, kg	102	104	107	108	105.9	6
Meat, kg	74	75	75	76	102.7	2
Milk, kg	231	230	229	234	101.3	3
Eggs, pcs	278	283	284	285	102.5	7
Vegetable oil, kg	13.7	13.9	14.0	14.0	102.2	0.3
Sugar, kg	39	39	39	39	100	0

Source: Agro-industrial complex of Russia in 2019, Moscow, 2020.

In Russia, the main legal document defining the system of the official point of view on the goals, objectives, and main vectors of the state economic policy in the food supply system is the Doctrine of Food Security of the Russian Federation. The shortage of food products is often accompanied by hunger among a part of the population. Malnutrition is accompanied by stunted growth, leading to a higher incidence of diseases, and an increase in mortality. Starving people have an increasing number of depressions compared to those who are well-fed.

The problem of ensuring food security is the shortage of water, which negatively affects the yield of grain and the gross harvest of agricultural crops. Food security is affected by the way of life of the population, the dependence of the state on the production of its own food.

Depletion of soil fertility is a detrimental factor in reducing crop yields. In this regard, one of the ways to increase the level of food security is to increase soil fertility, carry out work on the reclamation of agricultural land and perform cultural and technical works. From 2016 to 2019, the commissioning of reclaimed land in Russia increased from 90.1 to 95.2 thousand hectares, or 5.7%, and the volume of cultural and technical work increased from 142.7 to 306.0 thousand hectares, or 2.1 times (Table 4).

Table 4: Dynamics of land reclamation in Russia, thousand ha*.

Indicators	Years				2019 to 2016	
	2016	2017	2018	2019	%	+,-
Completed works on putting the reclaimed land into operation	90.1	101.1	96.1	95.2	105.7	5.1
Completed cultural and technical work	142.7	74.0	72.5	306.0	214.4	163.3

* According to the State Program for the Development of Agriculture and Regulation of Markets for Agricultural Products, Raw Materials, and Food.
Source: Agro-industrial complex of Russia in 2019, Moscow, 2020.

To ensure national food security in Russia, measures to increase soil fertility are being taken. For this purpose, the supply of mineral fertilizers to agricultural producers increases every year. Thus, from 2016 to 2019, the supply of mineral fertilizers to agriculture increased from 2,950.2 to 3,485.9 thousand tons of the active substance. At the same time, the area of soil liming increased from 222.0 to 303.6 thousand hectares, or by 36.8%. Every year, the volume of application of mineral fertilizers for agricultural crops in the country is increasing - from 2,253 thousand tons of active substance (2016) to 2,723 tons (2019), or more by 20.9%. During the period under review, the application of organic fertilizers for sowing agricultural crops increased from 65.2 to 70.7 million tons, or 8.4%.

Significant damage to food security is caused by diseases of agricultural plants and animals, which adversely affect the increase in the production of agri-food products. Russia carries out significant work to protect agricultural crops from pests, diseases, and weeds. Thus, from 2016 to 2019, the proportions of the cultivated areas where plant protection products were used in agriculture increased from 87.0 to 101.7 million hectares. The supply of plant protection products increased from 62.2 to 69.8 thousand tons, or by 12.2%, over these years.

To increase the yield, the role, and significance of the use of genetically diverse varieties and types of crops with more resistant resistance to diseases for sowing increases. For this purpose, when introducing new varieties, scientists-breeders use wild plants in order to transfer genes from wild plants to new varieties.

Climate change is among the main causes of significant food crises. In the future, food security will be correlated with the ability of people to adapt agricultural food systems to extreme natural phenomena. The vulnerability of the food supply system depends on climate change, which can have significant consequences for food security. Three factors can be distinguished that allow determining the dependence of the food supply system on climate change: specialized agro-ecological systems; rural households whose main source of income is agricultural production; situations in which the state cannot provide support for adequate systems for the safety of people.

The country's agricultural policy is reflected in the export and import of food products. In 2019, compared to 2017, exports of the main types of agricultural products in Russia in monetary terms increased by 18.5%. The export of total meat (except for poultry) from Russia increased from 78.9 to 31.6 thousand tons, or by 66.8%, poultry meat - from 163.7 to 211.1 thousand tons, or 29.0%, sunflower oil - from 2,326.9 to 3,098.2 thousand tons, flour and cereals - from 253.5 to 373.5 thousand tons, or 47.3%, oilseeds - from 1,830.7 to 2,567.5 thousand tons, or 40.2%, sugar - from 559.8 to 686.8 thousand tons, or 22.7%. At the same time, over the years compared, Russia reduced its export of milk from 63.2 to 46.0, or by 27.2%, butter - from 3.6 to 2.8 thousand tons, cereals - from 43,357.1 to 395,264 thousand tons, or 8.8%.

The food security of the state is also to a certain extent assessed by its participation in world trade, the export-import movement of food products. In 2019, the import of agricultural products in monetary terms increased from 28.9 to 30.0 billion rubles, or by 3.8%, compared to 2017. There is an increase in the import of butter from 99.7 to 120.0 thousand tons, or by 20.4%. At the same time, for all other types of food products, there is a decrease in imports, including meat by 40.6%, milk - by 23.7%, sunflower oil - by 87.7%, grain crops - by 30.9%, flour and cereals - by 31.2%, oilseeds - by 8.5%, sugar - by 9.3%.

The results of the functioning of the food supply system are influenced by the agricultural policy of the state. Insufficient attention of the government to the work of agricultural producers, administrative influence on the pricing of agri-food products generates discrimination in relation to agricultural producers. The artificial retention of prices for agricultural products at a low level of profitability of agriculture does not allow accumulating the necessary resources for investment in agricultural production.

5 CONCLUSIONS

The Government of each country should regularly organize a national survey to measure food security by using a set of special techniques, including the responses of respondents to questions. There are four categories of food security: high, marginal, low, and very low. A significant reserve in increasing the production of food crops is fraught with a reduction in the cultivation of non-food crops on arable land: industrial and medicinal plants. To ensure food independence, it is necessary to ensure guaranteed purchases of agricultural products. The level of prices for agri-food products should provide an economic opportunity for domestic producers to develop their own production, master modern agricultural technologies, use high-grade seeds, fertilizers, and means of protection against diseases and pests of agricultural plants and animals. One of the factors to ensure food security is the adoption of measures for the rational use of food waste.

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