

The System of Domestic Food Aid to Vulnerable Segments of Population: Social Nutrition, Organic Farming, Infrastructure

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Abstract — This paper describes the problem of creating a system for providing healthy nutrition to the vulnerable categories of population. The goal is to create a methodological basis for the development of specific infrastructure to ensure proper and healthy nutrition for those in need. Suggestions and results on the required implementation of regular measures to ensure food security, development of human capital, the formation and promotion of agricultural production and rational natural resources management are presented. Suggestions were made on the use of government support tools for the green block within the framework of World Trade Organization (WTO) standards, motivation farmers to maintain soil fertility, and to use land withdrawn from circulation as a resource for green food production. Land is required where the green production with low processing intensity can be organized – without using pesticides with a limited amount of fertilizers. This approach has become economically feasible for Russia and other countries that have joined the WTO.

Keywords—*food aid, government support, technology, soil protection, WTO.*

I. INTRODUCTION

The list of vulnerable groups of population which should be provided with healthy organic food is determined by the Food Security Doctrine of the Russian Federation. This list includes pregnant and lactating women, children, schoolchildren, clients of social institutions, etc.

Government needs to manufacture food products that will be produced in eco-friendly conditions. These conditions are connected with the availability of land resources based on which it is possible to organize eco-friendly production with a low processing intensity – without using pesticides with limited amount of fertilizer.

Social assistance to the people who need support is an important priority in the activity of the government of any country. For these purposes, a food aid distribution system with its own specific infrastructure is being created. World

Trade Organization standards have removed restrictions on direct government support for local agricultural producers and food processing enterprises for those in need. The funds previously allocated for direct government support of agricultural producers are transferred to the category of “green box” measures in accordance with the conditions of Russia’s membership in the WTO.

II. LITERATURE REVIEW

Providing the population with organic nutrition on a global scale is taking place in the context of strengthening soil degradation. According to FAO, “... about 33% of global soil resources degrade due to erosion, compaction and salinization, leaching of organic and nutrients, acidification, pollution, and other processes associated with unstable land management practices...” (D. Montgomery, 2015) [1]. To ensure food security and the sustainability of future mankind, the soil should be maintained by performing different actions in order to keep and improve its physical and chemical properties. Particular attention should be paid to soils that are suitable for growing organic products [2]. This is especially important under current conditions when more than 805 million people in the world are faced with hunger and malnutrition in conditions that do not meet eco-friendly food production practices. Increase in population over the next 35 years will require increase of food production of approximately 60%. Further, Montgomery stated the need to reverse the processes of soil degradation as one of the most underestimated environmental crises of our time. If modern approaches are not implemented, the total area of arable and fertile land per capita, according to the above source, in 2050 will be only a quarter of the 1960 level [1]. Based on official sources, data are provided that in Russia “at the beginning of 2008, 30 to 40 million hectares of arable land were withdrawn from circulation and not used (G.A. Romanenko, 2008) [3].

III. RESEARCH METHODOLOGY

There are various methods for studying the activities of enterprises and organizations, and consumer behaviors. The experience of the USA, Canada, Sweden [4, 5, 6, 7, 8] was used aimed at conducting a comparative analysis and monitoring of food aid system, as well as at practical

This study was carried out with the financial support from the Russian Foundation for Basic Research (RFBR) and the Government of the Omsk Region within the framework of scientific project No. 18-410-550027 p_a: “Fundamental processes of creating a system for providing vulnerable groups of population with organic food using conserved lands within the framework of implementation development strategies of the Omsk region”.

regulation of distribution relations. Methods of scientific research associated with the study of cash flows, information flows, flows of goods and services; methods of balance calculations in the field of land use, production and consumption of food; budgetary methods of business entities.

We studied the current state and using of land management in the Omsk region where survey method of research (questionnaire) in 2019 was applied. The questionnaires were made in such a way when each of the questions corresponded to the level of the respondent’s position. The total number of respondents amounted to 804. Questionnaires included questions on the actual state of economy and the types of measures applied; respondents’ opinion regarding the correctness (possibility) of applying certain methods and technologies; respondents’ awareness of the problem and the presence of economic motivation as a result of implemented methods and technologies; the social component of questionnaire. Survey results revealed the actual picture of land use, knowledge and understanding by respondents of the technologies used and of the correctness of their use. Social part of the questionnaire helped to understand the extent of current competencies required for solving issues regarding the applied technological methods for soil protection system.

Evaluation of the measures of awareness and economic motivation of soil-protective farming system by respondents included the following questions: “Please specify whether wind erosion of soil is a problem for your farm”, “Please specify whether, in your opinion, there is a risk to the economic conditions of the farm when applying soil-protective technologies”, “Please specify whether you consider using soil-protective technologies to be profitable”, “Please specify whether government support is required for the implementation of measures in order to protect soils from erosion” (Table 1).

TABLE I. EVALUATION OF AWARENESS AND ECONOMIC MOTIVATION FOR SOIL PROTECTING AGRICULTURE SYSTEM BY RESPONDENTS

| Assessments | Intensity ^a |
|--|------------------------|
| 1. The threat of erosion is very high | + |
| 2. Losses can be significant in several years | +++ |
| 3. Minor threat | ++ |
| 4. No threat | - |
| 5. Soil protection technology is definitely effective | +++ |
| 6. Immediate economic effect is unremarkable | + |
| 7. Using soil protection technologies in several years may put harvest at risk | - |
| 8. Yes, the implementation of soil protection technologies is a profitable business. | + |
| 9. You can save on processing, while losing harvest | +++ |
| 10. The technology has no economic effect | - |
| 11. Government support in the form of additional grants is required | +++ |
| 12. Support in the form of price benefits for soil protection equipment is required | ++ |
| 13. Support in the form of guarantees in the case of harvest loss | ++ |
| 14. No government support required because technology is cost-effective | - |
| 15. No support required with the complete independence of the agronomic service of economy | + |

^a. Assessment scale: + up to 20%, ++ up to 60%, +++ more than 60%

Government, with the methods of government support, has the opportunity – within the framework of WTO “green box” – to motivate agricultural producers to use soil protection

technologies in order to use soils unsuitable for active exploitation, for organic farming and production of organic products [3]. For Russia and other countries that have joined the WTO over the past two to three decades, this approach has become economically and socially acceptable. Government support tools can create a mechanism to help farmers engaged in production on degraded soils [9].

IV. RESULTS

Objective: to develop a methodological basis for activities in the socio-economic sphere in order to provide healthy nutrition for those in need; to propose practical measures for using of government support tools for WTO green block; to motivate farmers to maintain soil fertility and to use conserved lands as a resource for eco-friendly food production.

Scientific novelty. Food aid in the domestic market, with the use of government support tools in accordance with the WTO standards in force in Russia, solves the problems of rural employment, substitution of imported food products, and rational use of natural resources – it allows using conserved land that is unsuitable for intense use. As a rule, it happens as a result of violation of soil protection technologies. Over the past 8 years, in the Omsk Region, a decrease in arable land was noticed, with an increase in fallow lands in the structure of agricultural land from 2.0% to 2.7% by 2017. Irrational management of land resources, decreased land fertility and the reduction of cultivated land are based on the existing negative dynamics in the use of agricultural lands. This problem can be solved by working towards two growth areas: on the one hand, it is necessary to find additional land resources with special characteristics in order to provide food for the population, and on the other hand, it is necessary to motivate land users to carry out soil-protective farming in order to return conserved lands and to increase agricultural production. Land use efficiency is the basis for ensuring the efficiency and sustainability of agricultural production [10].

Digitalization of the territory using MapInfo Professional software clearly demonstrates the state of land use by fields and allows precise forecasting of the arable land lease plan taking into account specific planning period [11].

Analysis of the data from the survey allows concluding that respondents have an idea about soil protection technology, understand the danger of soil erosion for crops, and assess using of soil protection technology as a positive economic factor.

Changing priorities in the range of the economic condition of agricultural producers from the level of survival to high profits show the transition from the lowest to the highest priority levels (Table 2).

TABLE II. HIERARCHY OF PRIORITIES DEPENDING ON THE LEVEL OF THE EFFICIENCY OF LAND USE BY AGRICULTURAL PRODUCT MANUFACTURER

| Priorities | Place in the hierarchy of priorities in terms of profitability | | |
|---|--|-----------------|-----------------------------|
| | <i>high</i> | <i>moderate</i> | <i>low (survival level)</i> |
| 1. Ensuring the profitability and growth of agricultural producers | 4 | 3 | 1 |
| 2. Meeting the needs | 1 | 1 | 2 |
| 3. Compliance with the requirements of the employees of the company | 2 | 2 | 3 |
| 4. Protection of lands from different negative processes | 3 | 4 | Is not a priority |

As we can see from this table, low-income enterprises do not mention land protection as a priority.

Government is taking steps to improve the situation in agriculture. So, the Russian Federation until 2013 had a Federal Target Program for the maintaining and restoration of soil fertility in agricultural lands [12]; its purpose was the maintaining and rational use of agricultural and cultivated lands, creating conditions for increasing production of high-quality agricultural products on the basis of restoration and improvement of soil fertility of agricultural lands, etc.

From 2014 to 2020, "Development of Land Reclamation of Agricultural Land of Russia for 2014-2020" Federal Target Program is in force in Russia which is aimed at improving the productivity and sustainability of agricultural production and soil fertility by means of comprehensive land reclamation under the conditions of changing climate and natural anomalies; increasing the production potential of reclaimed land and the efficient use of natural resources [13].

The programs specified were designed for local use in specific regions. Total restoration of degraded lands under these programs is problematic, since in our country there is no centralized federal program for the total return of degraded soils for using in agriculture.

A number of macro- and microsocial factors influence decision making regarding soil protection technologies. Macrosocial factors are not included in the scope of land user activity, microsocial ones relate to the activity of economic entities. The former factors include insufficient development of social engineering and transport infrastructure, changes in demographic situation, lack of decent working conditions, government policy, etc. The second group influences the decision making on the use of technologies, the measure of mastering knowledge and skills, and the behavior of land user regarding technologies.

Changes in the economy, food distribution and cooking technology occur during the implementation of food aid program. The enterprises working under this program have a stable order; regions have stable domestic demand and budget revenues.

The contribution to science is as follows:

- understanding of specific features of the development of the system of assistance to vulnerable groups in countries with transforming economy;

- socio-economic nature of the processes of the influence of informal institutions on the motivation of farmers to use soil protection technologies in agriculture was revealed;
- within the framework of the institution of government support, a comprehensive solution model was proposed for the problems of protecting and restoring natural aspects of production by implementation of organic farming technologies for the production of eco-friendly products, resource support for social nutrition system in the region;
- proportions and mechanisms of creation and development of the system of domestic food aid to the population were revealed.

V. PRACTICAL SIGNIFICANCE

Economic effect includes the following:

- an opportunity emerged to form a stable social order for local agricultural producers and processors;
- mechanisms of government support for entrepreneurs participating in the implementation of projects of domestic food aid to the population were developed that actually stimulate them to increase production volumes;
- agricultural organizations, farms, households producing local products have the opportunity to switch to the distribution network formatting systems.

Social effect is provided by:

- adequate and high-quality nutrition of children in preschool and educational institutions;
- providing low-income groups of population with guaranteed and high-quality nutrition;
- the possibility of subsidizing part of the costs for low-income parents.

The level of reliability of these results is considered from the point of view of representativeness and consistency, as well as the prevailing ideas in modern science about global trends in the changes of the resource part in agriculture and approaches to food consumption [14, 15].

VI. SUGGESTIONS

The society recognizes the need to implement regular measures to provide food security, to develop human capital, to develop agricultural production and rational natural resources management. The issue of proper nutrition, especially of the younger generation, is considered in the context of the health of nation.

As part of this study, the following tasks were solved:

1. Theoretical basis of the fundamental processes of the creation of food aid system for vulnerable groups of population was investigated.
2. The amount of vulnerable groups of the population in the region and their need for food aid was determined.

3. Practical measures were developed to solve economic and social problems of developing the institutions of the regional infrastructure for domestic food aid.

4. Possible opportunities for using conserved land as a resource for food production were worked out.

5. The possibility of creation of a production and logistics center was investigated, the corresponding parameters were determined.

6. The structure of production enterprises, infrastructure organizations included in the food aid system of region as part of cluster interaction was worked out.

7. A mechanism was developed for the interaction of the production and logistics center with suppliers of raw materials in the terms of packaging and processing.

8. A draft documentation procedure between production and processing enterprises, trade and payment systems was developed.

9. The assessment of effectiveness and reasonability of returning conserved lands in agricultural use for the production of organic food.

10. A mechanism was developed for the interaction of the production and logistics center with food consumers.

VII. DISCUSSION

The system of domestic food aid to vulnerable groups of population (pregnant and lactating women, children of preschool and school age, stakeholders of social institutions and other socially unprotected categories) consists of the planned implementation of the following subsystems: social nutrition, eco-friendly agriculture, infrastructure.

Social aid to people who need support is one of the priorities in the work of the government of any country. A food aid distribution system with its own specific infrastructure is created for social aid to those in need which are mentioned above. To meet these needs, it is necessary to use eco-friendly conserved land resources. Agricultural organizations and farmers should return these lands, without using pesticides with a limited amount of fertilizers, as a part of the development strategy of the Omsk region.

To understand the current state and use of land management in the Omsk region, a survey of 804 respondents was conducted.

Obtained questionnaire data on the use of all elements of soil protection technology indicate a lack of knowledge, especially in direct performers: heads of farmer households, foremen, machine operators. Therefore, we proposed to implement a comprehensive model for the restoration of natural aspects of production through the implementation of organic farming technologies for the production of eco-friendly products.

This model is aimed to return in agricultural use those agricultural lands that have been destroyed as a result of irrational land management; and it includes the following: using destroyed lands to obtain eco-friendly products; providing domestic food aid to those in need; methods of governmental policy; through targeted programs, to level the difference in incomes of the heads of farmer households working on unsuitable lands, and agents conducting intensive farming.

Taken into account the current situation in the field of providing the population with food, as well as economic and social problems, scientific problems are being solved to create food industry technologies and to develop new traditions in consumer culture.

VIII. CONCLUSION

It was revealed that, along with social significance, the motivation for the development of domestic food aid system in countries with economies in transition is to overcome the limitations of WTO on direct support of producers.

Decisions on technologies in agriculture, protection of soil from destruction depend on macro-social, micro-social and government policies.

In agriculture, there are economic and socio-cultural prerequisites for the development of negative scenario, retaining tendency to the destruction of fertility and the physical condition of soil.

In the field of government regulation, priority areas are the following: support for domestic producers and processors of agricultural products under the "green box" of WTO norms; it is necessary to conduct research in the field of informal institutions, mechanisms for motivating farmers to use environmental protection technologies and degraded lands.

REFERENCES

- [1] D. R. Montgomery, *Dirt: the Erosion of Civilizations*. FAO, 1961.
- [2] V. Stukach, N. Starovoytova, *Problems of food security for needy strata of the population: conceptual framework, infrastructure, resource provision; Land resources for the production of environmentally friendly food; State support within the WTO rules*: MPRA Paper from University Library of Munich. Germany, 2017.
- [3] A. V. Gordeeva, G. A. Romanenko, *Problems of degradation and restoration of agricultural land capability in Russia*, Academicians of the Russian Agricultural Academy, Eds. Moscow: Rosinformagroteh, 2008.
- [4] A. Romeo, J. Dewbre, B. Davis, and S. Handa, *American Institutes for Research*. 2013. *Zambia, s Child Grant Program: 24-month impact report*. Washington, DC. 2015.
- [5] D. K. Evans and A. Popova, *Cash transfers and temptation goods: a review of global evidence*. World Bank Policy Research Working Paper No. 6886. Washington, DC: World Bank, 2014.
- [6] J. Peterson, "The TANF Reauthorization Debates: Key Welfare Reform Issues and Concerns," *Journal of Economic Issues*, Vol. 36, No. 2, pp. 431-439, 2002.
<https://doi.org/10.1080/00213624.2002.11506487>
- [7] H. G. Jacoby, "Is There an Intrahousehold 'Flypaper Effect'? Evidence from a School Feeding Programme," *The Economic Journal*, Vol. 112, pp. 196-221, 2002.
- [8] W. J. Wilson, *The Rights and Wrongs of American Welfare Reform in Welfare Reform: Learning from American mistakes?* H. Glennerster, J. Hills, K. Kiernan, J. Le Grand and A. Power, Eds. London: CASE, 1998.
- [9] V. F. Stukach, "Organic farming - a source of organic food: problems and solutions," *Black sea scientific journal of academic research*, Vol. 23, No. 5, pp. 71-75, 2015.
- [10] Y. M. Rogatnev, O. N. Dolmatova, V. V. Aleschenko, M. N. Veselova, and Y. S. Yusova, "Evaluation of conditions for effective agricultural land-use as a basis for sustainable development of plant-growing production in the Omsk region," *Ecology, Environment and Conservation Paper*, Vol. 24, No. 4, pp. 1546-1554, 2018.
- [11] O. N. Dolmatova, Y. M. Rogatnev, V. N. Scherba, "Electronic field map is an informational basis for growing sustainable business in agriculture in the face of land quality differences," *Advances in Intelligent Systems Research*, Vol. 167, pp. 160-163, 2019.
<https://doi.org/10.2991/aispc-19.2019.36> [International Scientific and

- Practical Conference «Digital agriculture - development strategy» (ISPC 2019), 2019]
- [12] Maintaining and restoration of soil fertility of agricultural and cultivated lands as the national heritage of Russia for 2006-2010 and the period until 2013: Federal Target Program (approved by Decree of the Government of the Russian Federation No. 99 as of February 20, 2006 (last revised on December 27, 2012).
- [13] Development of land reclamation of agricultural lands of Russia for 2014-2020: Federal Target Program (approved by Decree of the Government of the Russian Federation No. 922 as of October 12, 2013 (as amended on September 20, 2017, as amended on October 12, 2017).
- [14] V. F. Stukach, "Degraded soils: a resource for providing organic nutrition to socially vulnerable segments of the population, motivation farmers to use environmentally friendly technologies," *Journal of Agriculture and Environment*, No. 3(11), 2019. <https://doi.org/10.23649/jae.2019.3.11.7>
- [15] N. P. Starovoitova, V. F. Stukach, *Infrastructure of domestic food aid in the region*. Omsk, 2017.