

BRANCH-WISE AND REGIONAL ECONOMY

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Significance of the North's agricultural sector in the food security provision and in the social and economic development of rural areas

The article deals with the problem of food security provision in the regions of the European North of Russia, stresses the capacity of local agriculture and the necessity of its maintaining, preserving and increasing of the production of organic agricultural output. Thereupon we have substantiated the necessity of consistent implementation of the budget subsidy expenses to maintain profitable industries which produce ecological foodstuffs and we've pointed out the criteria for classifying of agricultural products to the category of agricultural organic output. The article deals with the conditions and factors of production and realization of organic crop products in the Komi Republic.

Agriculture, North zone, food safety, organic agriculture.



**Valentin A.
IVANOV**

Doctor of Economics, Professor, Head of Laboratory of Institute for Socio-Economic and Energy Problems of the Komi SC of the Ural RAS department
ivanov@iespn.komisc.ru

Modern scientists researching the North have not developed a single scientifically substantiated economic and geographical concept of "the North"; it can be explained by different approaches of the researchers and the lack of common criteria. But all scientists agree that the North is a general geographic area of the earth covering the Arctic, tundra and a part of forest zone with the severe climate and difficult landscape conditions.

Heterogeneity of the North Zone's nature has allowed scientists to identify the internal economic and geographic subareas of the Far

(Extreme), Middle and Near North. According to the approaches and principles of geographic division into taxons the Russian North is divided into three macroeconomic regions – the European North, the Siberian North and the Far-Eastern North. Currently in accordance with the existing legislation the northern territories are included as components of the Far North regions and its similar areas, covering an area of 11.9 million square kilometers (69.6% in Russia) [1, p. 8, 14,16].

They are composed of 25 subjects. They are five republics, six krais, ten oblasts and four

autonomous okrugs. The territories of the Republic of Karelia, the Komi Republic, the Sakha Republic (Yakutia), the Tuva Republic, the Kamchatka Krai, the Arkhangelsk Oblast, the Magadan Oblast, the Murmansk Oblast, the Sakhalin Oblast, the Nenetsia Autonomous Okrug, the Khantia-Mansia Autonomous Okrug, the Chukotka Autonomous Okrug and Yamalia Autonomous Okrug are rated as the Far North regions and similar areas.

The northern territories are important for the economy of our country. 74% of Russian oil, 92% of natural gas, 10% of coal, 100% of apatite and nepheline concentrates, 19% of electricity, 38% of industrial wood, 30% of timber, 25% of plywood, 81% of cellulose, 47% of papers and 46% cardboard are produced in the Far North and its similar areas. In addition, the zone of the North is the unchallenged leader in the mining of gold, diamonds, vein quartz, mica, nickel, tin, cobalt, platinum group metals, in furs stocking and catching of fish and other seafood, in the production of fish products and canned fish [1, p.54].

At the same time, the area of farmland in the region accounts for 4,123 thousand hectares (2.5% of Russia), the cattle population accounts for 919.3 thousand head (3.9% of Russia). The share of the North in foxes and blue foxes population accounts for 13%. There are 1664.3 thousand head of reindeer (about 2/3 of world population) in the northern territories.

4.1% of potatoes, 3.3% of vegetable, 2.6% of milk and 2.2% of meat unto the total Russian agricultural output are produced in the north zone. The share of fish and seafood is 60.5%.

Enhancement of the role of the Arctic regions and their adjacent areas in the social and economic development of the country is directly related to the participation of northern indigenous people, whose lifestyles, traditions and culture are based on traditional forms of management – reindeer breeding, sea trapping, hunting and fishing. Small nationalities of the North are engaged in agricultural economy mostly.

Over 62% of the smaller peoples were engaged in agriculture and fishery sector during the pre-reforming period [2, p. 32]. Their employment share ranged from 79 to 90% in some rural municipalities of the Nenetsia Autonomous Okrug [3, p.7].

Geographical location of the territory and its large extent in the latitudinal direction determine, on the one hand, the considerable severity and, on the other hand, essential distinctions in the bio-climatic and economic conditions of agricultural development. A significant part of the territory is located within the Polar circle and within the permafrost. It occupies the tundra and forest tundra; its central and southern parts are located in the northern and middle taiga.

Natural conditions, climate, soil's quality and growing season hold back the efficient development of agricultural production. There are the most adverse conditions for agriculture in the Far North where tundra soils dominate and the thermal resources are extremely limited. Light frosts are possible during the whole growing season. The Arctic regions are characterized by short growing season, low temperatures of air and soil, poor soil development processes, scanty activities of soil microorganisms, increased acid medium reaction, low humus content, low content of phosphorus and other nutrients for the plants, low water permeability of the underlying rocks and, consequently, extensive bogs. Agriculture has a local character here due to the severe climatic conditions. It is possible to grow vegetables in hothouses in the tundra and produce dairy cattle food by meadow formation of mainland tundra and creation of thermokarst lakes at the bottoms.

Agriculture of the North has a long history. It was being progressed while the territory was being developed. Its specialty was formed under the influence of natural conditions, geographical location, historical, social and economic factors of production of such untransportable perishables as milk, meat, eggs, potatoes and vegetables as well as the products of traditional industries.

The fact that northern farming was possible was proved by the founder of agricultural science in the European North of Russia A.V. Zhuravskiy in the early twentieth. The Pechora Agricultural Experimental Station was opened by the Department of Agriculture of Russia in Ust-Tzilma in 1911. A.V. Zhuravskiy became a founder and first director of the station.

He outlined a broad range of questions for experimental solution developing the station. They included study of crop rotations; tillage with the rise of land ploughed in autumn for spring sowing and without it, tillage with shelling and spring plowing, tillage related to the various terms of fertilizer application; potato culture including selection for early maturation and grafting experiments; tobacco culture; experiments in the sphere of floriculture and fruit farming; bogs culture; study of mixed grass crops and experiments on the fertilizers' effect to botanical composition of natural grass canopy. They planned to build a model farmyard and study the methods of feeding and care of cattle, sheep, pigs and chickens.

A.V. Zhuravskiy believed that "the North can and must become the breadbasket of Russia". The main prerequisites for this were the following facts: the Arctic Ocean's retreat to the North; small and surface depth of the marshes that allows to turn them into the fertile land; long daylight hours; good supply of moisture [4, p.12].

A.V. Zhuravskiy proved that "Pechora agriculture was developed not due to climate but thanks to other conditions". And he hoped that Russia would use circumpolar abundance of light soon [5, p.64].

N.I. Vavilov, D.N. Pryanishnikov and other scientists proved that northern agriculture was rational.

The products¹ of the northern factory-farm enterprises were more expansive because of the severe climatic conditions and dilapidated technical manufacturing base. They couldn't

¹ As for deer farming, fishing, hunting, wild herbing and berrying, their production is competitive not only in the regional but in the national and international markets.

compete with similar products imported from abroad or produced in more southern regions of Russia. That's why economic bloc of the Government and several local administrators pursued a course to curtail agricultural production in the northern territories. However, such approach to the development of local agriculture as "Everything that makes a profit is good, but you should get rid of unprofitable business" isn't legitimate.

Heavy costs of agricultural activity shouldn't be an argument for the government to put obstacles in local production's way of its development because of the following reasons. Local foodstuffs could be categorized as strategic goods because they directly support life activity of more than 10.5 million people living in the Far North and its similar areas and determine the level of their food security.

Of course, agricultural production in the North is expensive and highly venturesome. There are substantial northern redundancy pays to wages here. Costs for heating of workrooms and the struggle with the early frosts, for cattle hibernation and caring for cultivated plants are higher here. It is the main reason for higher costs of manufacture here than in other regions. And costs of plant growing and livestock farming are higher at the producers living in more northern territories.

It is impossible to judge the competitiveness of agriculture in the North by one criterion which is cost of production. The competitive advantages of the northern farming include the duration of daylight hours during the growing season, good moisture supply, huge tracts of native meadows in the high-water beds and possibility to manufacture the ecological products. Scandinavian farmers successfully use the advantages of the northern agricultural production.

The chairman of the Central Council of the Entrepreneurs Union of Agriculture and Forestry in Finland Es Hyarmel says: "Finland has its "arctic" features in the agriculture as a northern European country. Cold snowy winters and short summer with long light days

restrict farming and food production. Winter is a kind of obstacle for increasing of this industry's competitiveness: only one harvest is gathered in from the fields, livestock needs fodder and warm housing, time of sowing and harvesting is short and it requires high efficiency of the machines and grain dryers".

High-quality food production is possible under such severe conditions of nature only in the country where soil, air and water are the most ecological in Europe, domestic animals are healthy and there is no salmonella. The nature is preserved in Finland because its territory is rarely populated. In winter the fields get rid of the pests and the microbes which are the cause of plant diseases. Delicious vegetables, greens and berries have time to ripen during the short summer with long daylight hours.

Northern people choose the ways to run their households themselves. As the members of the European Union they want to preserve their food culture, cultivated plants adapted to the northern conditions, healthy livestock and highly developed production technologies contributing to the world agricultural production.

Finnish farmer strives to produce ecological foodstuffs. They use methods that protect the environment [quote: 6, p. 201-202].

About 90% of Finnish farmers are blanketed into the ecological programs; 7% of households are fully engaged in the production of ecological products [6, p.79].

Russia has more opportunities to increase production of ecological products in the North and develop technology of organic farming than Scandinavian countries. Manufacturing of ecological products in the vast northern territories is becoming the main competitive advantage. Here you can expect to receive some kind of rental income from the realization of environmental products. That's why organic agriculture is one of the main long-range goals of agricultural development in the northern areas.

Organic agriculture is an agricultural practice of production; it is more ecological for a human organism for its sanitary characteristics than the products of traditional agriculture that

is confirmed by a certificate which is drawn up in accordance with the requirements of the International Federation Organic Agriculture Movements (IFOAM).

Organic agriculture is an opportunity for sustainable development of the industry, because it satisfies three interfacing components of sustainable development: economic, social and ecological. Economic sustainability of agriculture is achieved by meeting the needs of the population for ecological foodstuffs and ensuring of economic efficiency allowing to expand reproduction.

Social stability is provided for the consumers of organic products by increasing of its customer value due to reduction of unhealthy substances in the production and substances whose influence over a human organism is little-studied. It improves the quality of life notably due to better nutrition.

Social stability is also ensured by maintaining of manufacturing employment and improving of peasants' life. Environmental sustainability of agro-ecosystems is achieved by the implementation of protecting technologies and improvement of the natural resources base of agricultural production. Ecological safety of food is determined by the reduction of applied chemical fertilizers and chemical treatments of foodstuffs.

There are the following criteria for classifying of agricultural farming practices to the category of organic agriculture:

- mineral fertilizers are used in such amounts which are necessary to restore nutrients in the soil, which are handed down during the cropping and due to other factors;
- synthetic pesticides are replaced for biological methods of pest control and weed control;
- hormonal agents aren't used to stimulate growth and increase the quantum of output;
- genetically modified organisms, antibiotics, sewage sludge and foodstuffs exposed to radioactive irradiation aren't applied;
- there are no degraded agro-ecosystems (e.g., soil erosion and soil depletion);

Table 1. Conditions and Factors for Organic Crop Production and Realization in the Komi Republic

<i>Conditions</i>	
Positive	Negative
<ul style="list-style-type: none"> • Climatic conditions and the economic potential of the republic allow produce efficiently potatoes, local field vegetables in the southern and central municipal formations where the main arable lands are located • In general, there is a smaller range of pests and plant diseases in the open ground than in the southern regions of Russia because of the cool climate 	<ul style="list-style-type: none"> • The share of the most productive agricultural arable land accounts for only 0.24% of the republic's area • Low natural soil fertility in the Republic, low humus content, high acidity, the reduction of reclamation building • Significant decline in the agricultural sector's investments • Minimal state support for agricultural producers
<i>Factors</i>	
Positive	Negative
<ul style="list-style-type: none"> • There is a minimal number of anthropogenic impact sources to the ground in the southern and central agricultural municipalities in the Komi Republic so it is the most suitable territory for organic agriculture from the ecological point of view • Public demand for organic crop products • 56% of residents of Syktyvkar agree to buy ecological products by market prices • There are elements of organic crop production technology in the Komi Republic and researches in this field • The administrators of the agricultural organizations are interested in producing of organic output if the Russian standard is developed 	<ul style="list-style-type: none"> • There is no standard of the Russian Federation "Production and realization of the organic products" • The most agricultural enterprises are unprofitable • Reduction of the number and qualified level of the managers and specialists in agricultural enterprises • Reduction of organic fertilizers • Lack of storage and implementation of organic production technology • Lack of information about opportunities of organic production • The access of agricultural producers to the financial markets is restricted

• approaches of adaptive agriculture are used to the limit;

• production of organic agriculture is subject to voluntary certification, which ensures more safety for human organism in its hygienic characteristics than the products of traditional agriculture [7, p. 36].

Study of the conditions and factors of organic farming by way of example of the Komi Republic has revealed that the region has opportunities to produce ecological products (*tab. 1*).

It is necessary to realize the following measures for production and distribution of organic products:

• transition of a certain territory into a state that is suitable for organic production; continual investments to conditioning of soil quality;

• improving of the system of information exchange about technologies for organic agriculture, training of managers and specialists of agricultural enterprises and farms, their constant consulting in the field of ecological production;

• certification of organic products;

• formation of the public opinion as to the consumption of ecological foodstuffs;

• examining of pricing issues, choice of distribution channels for realization of organic products;

• ability to ensure the ecological safety of agricultural products throughout the whole chain – from a producer to a final consumer, development of nationwide organic logo;

• providing the consumers with the organic products during the whole year round;

• continued researches in the field of technologies' production for organic agriculture and organic production distribution.

Agro-industrial potential of the southern and central areas of the North zone allows to produce efficiently potatoes, local vegetables and cattle-breeding products. There are more suitable natural conditions for agricultural development in the European North. The analysis of dynamics of agricultural production efficiency for a 25-year period which was conducted by the regression equations showed that the average annual growth rates of gross

production per unit of land area amounted to 4.4%, growth rates of working efficiency amounted to 5.7%. Moreover, these figures were higher by 1.3 and 1.1 percentage points than in the North-Western economic region, but average annual change of production price did not differ virtually [8, p. 94, 96].

The Komi Republic gained a lead in the yield of potato, it was the fourth by the yield of open ground vegetables, it was the eighth by the yield of milk and the third by the hens' egg production among 71 regions of the RSFSR in the late 1970's and early 1980's. These figures were 1.3 – 1.5 times higher than in the regions where foodstuffs are being imported from to the republic now. It is feasible to get in the republic 200 – 300 quintals of potatoes from a hectare, 300 – 400 quintals of vegetables, 20 – 30 quintals of winter rye, barley and oats (in the southern regions), 40 – 50 quintals of permanent grasses using modern technology.

Favourable prospects to promote agriculture in the Far North will open in terms of global warming. The area of land which is suitable for agriculture will increase by 1.5 times and the biological potential of land resources will increase by 30% as a result of warming in Russia [9]. It is necessary to take into account not only the advantages of climate changes, but such disadvantages as the growth of crop pests and diseases during the recent years.

Need for agricultural production in the North is made conditional on the solution of the food security problem². Now the share of imported foodstuffs accounts for 40% of total consumption in the Russian Federation. According to the UNO the maximum allowable rate for food security is 20%.

Import of food products increased from 7.4 to 35.2 billion dollars in 2000 – 2008. The import volume of meat and meat products increased from 1.5 million in 1990 to 3.2 million tons in 2008 (*figure*).

It should be noted that the share of domestic food products in total commodity resources of the domestic market will be in the Doctrine of the food security of the Russian Federation in 2020: grains and potatoes – at least 95%, sugar, vegetable oil and fish products – not less than 80%; meat and meat products – at least 85%; milk and dairy products – not less than 90%, dietary salt – not less than 85% [11]. Our country will have not reached food self-sufficiency even in the long term (in 10 years) (*tabl. 2*).

Great agricultural potential of the North and expected food self-sufficiency of Russia

² The materials of the World Food Conference (Rome, November 1996), which adopted the Rome Declaration on World Food Security mention that food security is ensuring of physical and economic access for population to sufficient, safe and high-calorie food in order to meet the nutritional needs of a certain quality and quantity giving people the opportunity to conduct an active and healthy lifestyle [10].

Import of livestock products to Russia in 1990 – 2008, thous. tons



Table 2. Consumption of the main foodstuffs per capita in Russia, kg

Foodstuffs	Science-based quota	1990	1995	2000	2005	2007	2008
Meat and meat products	88	75	55	45	55	61	66
Milk and dairy products	440	387	254	215	235	242	243
Egg, pieces.	290	297	216	228	250	254	254
Potato	110	106	124	118	133	132	132
Vegetables, watermelons, melons and gourds	140	89	68	86	103	110	111
Fish and fish products	23	20	10	10	13	14	15
Sugar	43	47	32	35	38	39	40
Vegetable oils	8.8	10.2	7.5	9.9	12.2	12.8	12.7
Bread products	110	120	122	117	121	121	120

Source: Regions of Russia. Social and economic indicators. 2008: st.coll. / Russtat. – M., 2008. – Pp. 198, 200; Regions of Russia. Social and economic indicators. 2009: st.coll. / Russtat. – M., 2009. – Pp. 204-209. Russian Statistical Yearbook. 2009: st.coll. / Russtat. – M., 2009. – P. 441. Agro-industrial complex of Russia in 2008. – M.: Ministry of Agriculture of the RF, 2009. – P. 476, 478.

can be used in future for provision of growing world population with food. According to the UNO one billion people go hungry in the world now and 17 thousand children starve every day. Depletion of natural resources, increasing of non-agricultural land using, population growth lead to the reduction of arable land area per a person. 2.4 hectares of grain crops accounted for one person in 1950; but only 1.2 hectares accounted for a person in 2007. According to forecasts this figure could drop to 0.8 hectares if we maintain the current rate of population growth [12, p.26].

The particular importance of agriculture lies in the fact that this industry is a basis for rural development. According to the results of the All-Russian agricultural census in 2006 near 100.6 thousand people are employed in the agricultural enterprises, farms and individual entrepreneurship in the Far North. In addition, a lot of people were employed in 1134 thousand of individual households [13].

Growth of agricultural production is closely linked with social development of the northern villages. Northern agriculture only provides people with fresh biological valuable food, but also stimulates the development of food industry, stabilizes employment, prevents the monopolization of local food markets by individual suppliers of products, controls food prices imported from other regions. It serves

as a traditional way of life of rural population, contributes to maintaining of spirituality, culture, traditions, morals by native people, improves the demographic situation and system of people settlement, it conserves the environment natural landscape. Agriculture is both industry of the essential material goods and the sphere of human activity. Elimination of agricultural production means a change of residence or even a way of life.

Agriculture gravitates towards social issues because of its specificity and features of market relations in the industry; it can be developed only with public support. The budget support of the northern agriculture is too important. Agricultural enterprises and farms will have to phase out production of untransportable and perishable products without government support. Then the state will need more funds to employ indigenous ethnic groups in other spheres than to maintain the agricultural sector formed over a long historical period in the north.

Agricultural development of the northern territories was the most favorable in 1970-1980. The dynamics of crop production and livestock in 13 subjects whose territories are fully included in the Far North and similar areas, showed that the average amount of vegetables was increased by 19%, milk production was increased by 25%, meat production was doubled, eggs

amount was raised by 2,6 times in 1986 – 1990 in comparison with a period of 1971 – 1975. The share of the European North's production accounted for 54% of agricultural production in the Northern territories in 1990.

Crop rotations, new crop varieties, new technologies of their cultivation, measures to improve soil fertility, science-based farming systems, intensive forage production systems, advanced fodder technologies, mechanized seed and herbs technologies were implemented in the agricultural sector of the North during the pre-reform period. Livestock farms and poultry farms were built and developed near the towns. Population of several regions was fully provided with eggs. Transition of the agricultural sector into industrial basis contributed to that fact.

There were positive changes in the convergence of conditions and living standards of urban and rural populations, as well as in pricing by rising of purchasing price for agricultural products and in the financial performance of farms. All state and collective farms were profitable in 1990. The level of profitability conformed to optimal rate (40 – 50%), allowing to carry out the process of expanded reproduction. In addition, budgetary allocations influenced greatly over the sources of the expanded reproduction.

Food consumption rates by the residents of the northern territories approached to the national average level and they exceeded it in some subjects. Northern population had been producing own meat, dairy products and potatoes, the third part of eggs and 18% of vegetables till 1993[2, p.34]. The share of local resources in creating of the food fund reached 94% of potatoes, 21% of vegetables, 48% of milk, 40% of meat and 91% of eggs in the Komi Republic in 1991.

Market reforms of 1990 were accompanied by the decline of agricultural production and degradation not only of the productive capacity of the industry, but of the peasant community.

Thus, the need for agricultural development in the North is accounted for the following reasons.

1. It is impossible to judge the competitiveness of agriculture in the North by one criterion which is cost of production. The competitive advantages of the northern farming include the duration of daylight hours during the growing season, good moisture supply, huge tracts of native meadows in the high-water beds and manufacturing of organic production allowing to get rental income.

2. Speculations about the lack of competitiveness and minimizing of agricultural production in the North can turn into inability to solve the problem of food security in the country and providing the population with ecological products; they can become the reason for huge public expenditures on employment of the indigenous people in non-agricultural activities. Elimination of the northern village is painful and costly process, and it can also weaken national security.

3. The state should not curtail agricultural production in the Northern territories. On the contrary, it is necessary to devise a state program of development of the agricultural and food sector and rural northern areas. The Northern areas can become a major reserve center of food production, especially of livestock production in future. When our domestic market is filled with the domestic foodstuffs Russia with its vast northern territories would become a major exporter of ecological food products.

References

1. Obedkov, A.P. Economic geography and regional economics of the Russian North: textbook / A.P. Obedkov. – Syktyvkar: KRIRO and PK, 2009. – 164 p.
2. Seleznev, A.I. Agro-industrial complex of the Far North in Russia (organizational and economic base for development) / A.I. Seleznev, V.A. Uvarov. – M.: FSRU "Rosinformagroteh", 2002. – 232 p.

3. Ivanov, V.A. Social and economic development of Indigenous Peoples of the North: state, problems and implementation mechanisms / V.A. Ivanov, T.Y. Mikusheva, T.V. Evdokimova // Social and economic development of the Northern areas. – Syktyvkar: Komi Science Center, 1991. – Pp. 5-20.
4. Shmorgunov, G.T. A.V. Zhuravskiy as a founder of the agricultural science in the European North of Russia / G.T. Shmorgunov // Selected works on agricultural development of the Pechora's North. – Syktyvkar, 2007. – Pp. 3-16.
5. Zhuravskiy A.V. Selected works on agricultural development of the Pechora's North / A.V. Zhuravskiy. – Syktyvkar, 2007. – 107 p.
6. Kazarezov, V.V. Experience of Scandinavian farmers for Russia / V.V. Kazarezov, S.L. Belyakov. – M.: FSRU "Rosinformagroteh", 2004. – 240 p.
7. Kolegov, M.G. Factors and Conditions for Organic Crop Production in the Komi Republic / M.G. Kolegov, V.A. Ivanov. – Syktyvkar, 2004. – 175 p.
8. Ivanov, V.A. Intensification of agricultural production: the problem of development and efficiency / V.A. Ivanov. – M.: Science, 1990. – 200 p.
9. Sirotenko, O.D. Global climate changes and food security in Russia in the XXIth century / O.D. Sirotenko // Food security of Russia: Materials of the International Conference. – M., 2002. – Pp. 82-96.
10. The Rome Declaration on the World Food security // APC: economy, management. – 1997. – № 2. – P. 3-6.
11. On approval of the Doctrine of the food security of the Russian Federation: Decree of the President of the Russian Federation of 30.01.2010 № 120 // Agricultural and processing enterprises economy. – 2010. – № 2. – Pp. 71-74.
12. Kovalev, I.E. Worsening of the world food situation / I.E. Kovalev // World Economy and International Relations. – 2009. – № 9. – Pp. 21-29.
13. Results of the All-Russian Agricultural Census of 2006: In 9 volumes. – V. 7: Agriculture of the Far North and its similar areas / Federal State Statistics. – M.: Publishing Center "Statistics of Russia", 2008. – 391 p.