

# ECONOMICS OF THE AGRO-INDUSTRIAL COMPLEX

DOI: 10.15838/esc/2015.3.39.12

UDC 631:001 (470.13), LBC 65.321-80(231)

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## Main Directions for Accelerating Modernization in the Agricultural Sector in the Rural Periphery of the North (Case Study of the Komi Republic)\*



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\* The article was prepared with the financial support of research projects of the Ural Branch of RAS No. 15-14-7-8, No. 15-14-7-10

**Abstract.** Agricultural production in the rural periphery of the North requires modernization because it is necessary to overcome the backwardness of its technical and technological level, to improve the provision of the population with local food products, to create competitive advantages in the local and regional markets, to use natural and human capital rationally, to raise the standard of living and quality of life of agricultural workers, to retain young people in rural areas, to reduce significant differentiation in socio-economic development of remote and suburban areas. The period of market reforms was marked by the destruction of the material-technical base of agriculture, the sharp reduction in cultivated agricultural land, number of animals, number of workers, the deterioration of their professional level and quality of life, the decline in production of all kinds of agricultural products. In the period of market reforms the facilities and infrastructure basis of agriculture was destroyed, the volume of cultivated land reduced greatly, as well as the population of livestock, and the number of employees; their professional level and quality of life deteriorated, the production of all kinds of agricultural products reduced. Agriculture was deprived of possible technological re-equipment because of prices liberalization, the drastic reduction in state support and in the amount of investments. The article proves that current views on the lack of prospects for development of agricultural production in the rural periphery and the reorientation of rural residents on other activities are not acceptable. The authors point out the need to accelerate modernization in agriculture, and they conclude that sustainable agricultural and rural development is a long-term priority for the state and municipal authorities. The article considers the possibilities and necessity of intensifying modernization processes in the agricultural production of the rural periphery for the purpose of establishing food security in the northern region. The authors suggest ways and mechanisms to modernize agriculture in the peripheral areas of the Komi Republic that are connected with the improvement of living conditions of peasants, with staffing, scientific-information and advisory support, and with the creation of an effective system of state support. The research findings presented in the paper can be used for adjusting the current State Program for Development of Agro-Food Sector, as well as the similar program for the Komi Republic for 2021–2025.

**Key words:** modernization, agriculture, peripheral areas, Komi Republic, factors, conditions, state regulation mechanisms.

A retrospective analysis of modernization processes in the agriculture of peripheral regions of the Komi Republic has shown that these processes were actively developing in 1960s–1980s. In the period of market reforms the facilities and infrastructure basis of agriculture was destroyed, the volume of cultivated land reduced greatly, as well as the population of livestock, and the number of employees; their professional level and quality of life deteriorated, the production

of all kinds of agricultural products reduced [4, 9]. At present, the majority of agricultural enterprises and peasant (farm) enterprises in remote territories have lost their economic and social sustainability. Current trends in the agricultural sector can lead to its elimination and to the abandonment of rural areas that were inhabited for centuries.

The present article is an attempt to substantiate the main directions of promotion of modernization processes in

the agricultural production of the rural periphery in the northern region.

**The need for modernization of the agricultural sector in peripheral rural areas**

The peripheral position as a scientific category is versatile, that is why it is studied from the viewpoint of different concepts: developmental, rental, managerial, diffuse-innovation, and deprivation [2]. The following districts: Ust-Tsilemsky, Izhemsky, Udorsky, Troitsko-Pechorsky, Ust-Kulomsky and Koygorodsky are classified as peripheral rural territories according to the comprehensive assessment of periphery status of the Komi Republic, executed by T.E. Dmitrieva [1].

Today, the mass media and some scientists share a common opinion that there are no prospects for agricultural production in the rural periphery and that there is a need to create large agricultural enterprises in suburban areas. It is recommended to use the fly-in fly-out employment schemes to cultivate agricultural land in peripheral rural areas or to reorient local employment from agricultural to alternative activities. Of course, major agro-industrial enterprises should be developed. But if we talk about priorities, this question is debatable. First of all it is necessary to develop the relations between agriculture and the production of safe-health products.

T. G. Nefedova believes that a relatively normal agriculture outside the Back-Earth region and the North Caucasus exists only in suburban areas, and also in the territories of some non-Russian peoples of the Volga region and Siberia [6]. According to T.

El'dieva, the further development of the agricultural sector in the republics of Karelia and Komi, and in the Arkhangelsk, Novgorod and Pskov oblasts has no prospects. It is advisable to reorient the employment of local population, in these areas from agricultural to alternative activities based on the use of natural resources: forests, fisheries, local mineral deposits, etc. Agriculture should receive budget support only in the municipal districts of the Leningrad and Vologda oblasts, in which human, equipment and technological potential for the development of agricultural production still exists [11]. B.B. Rodoman suggests that a great part of our country be transformed into natural parks and reserves (environmental specialization). This program does not need financing: arable lands, and pastures will be covered with forest; wild flora and fauna returns to its former habitats. Environmental specialists all over the world observe this great restoration of nature with admiration and envy [7, p. 378].

The implementation of these scenarios of functioning of peripheral areas is connected with the following factors: the inability to ensure food security in the country and its regions and to produce environmentally safe food; environmental impact on urban and suburban areas and on the health of consumers of food products; large public expenditure for providing employment of farmers in non-agricultural activities. The elimination of the northern village is not only a painful and costly process, it also weakens national security. According to V.N. Lazhentsev, if there is no

developed periphery, the center itself will sooner or later be at a disadvantage [5, p. 55].

The state should not eliminate agricultural production in peripheral areas, but rather it should accelerate its modernization. The need to intensify modernization processes is dictated by the overcoming of the backwardness of its technical and technological level, by the strengthening of positions in the provision of the population with local food, by the formation of competitive advantages in local and regional markets, by the rational use of natural and human capital, by the increase in the level and quality of life of peasants, by retaining young people in rural areas, by reducing the significant differentiation in socio-economic development of remote and suburban areas.

Remote rural areas of the Komi Republic have favorable opportunities for the development of cattle breeding (large floodplain meadows in the basins of the rivers located there). This branch has an important and multifunctional value: it provides people with fresh dairy and meat products, ensures their year-round employment, and also allows for the most efficient use of hayfields, pastures and forests. Cattle breeding should be considered a strategic direction in the development of the agricultural sector. The importance of rapid modernization of the industry is due to the fact that the Republic (the data for 2013) produces 66 kg of milk and 3.2 kg of beef in per capita terms, which is, respectively 15 and 8% of the evidence-based consumption rate. The residents of the Republic have a huge

demand for fresh and wholesome dairy products, beef and veal produced in the rural periphery. The industrial nature of the development of the Republic serves as a prerequisite for technological and socio-economic development of the agrarian sector, because it allows significant funds to be allocated for the modernization of industry and integrated development of rural territories.

The areas under consideration have the potential for organic production and formation of appropriate market segment. The sales of environmentally friendly products can generate a sort of rental income. The solution of modernization and social issues of the village will turn the agriculture in the peripheral northern territories into a promising exporter of organic products. The advantages of northern agriculture for the production of organic foods have been used successfully by Scandinavian farmers. The opportunities for the development of agriculture can be implemented through a set of measures associated with the modernization of production.

#### **Social factors that accelerate modernization**

The demographic situation in peripheral rural areas of the Komi Republic is complex and it is rapidly deteriorating by individual indicators. Here the population has decreased by 47.5 thousand or 33.4% over the period of 1990–2014. Major changes have occurred in the age structure of the population due to negative natural population increase and migration decrease. Fertility rate has decreased.

The low standard of living and quality of life in the village (low incomes, poor housing conditions, unfavorable situation in the labor market and high unemployment, the insufficient level of social development and better living conditions in the cities) adversely affects migration processes in rural areas. Migration loss in peripheral rural areas was over two thousand people on average in 2011–2013. Persons of working age made up 77% of the total number of migrants, persons under working age made up 15.8%. Moreover, there were 1.6 times more migrants with higher education who left compared to those who arrived.

The worsening of the demographic situation in the rural periphery will cause a reduction in the amount of human resources and lead to their aging; in the future it will become a factor that hinders modernization in the agricultural sector.

The demographic situation in peripheral rural areas will improve only if employment and incomes increase, poverty is alleviated, living conditions are improved, transport infrastructure is developed, social situation in the settlements is improved, and the economy goes through institutional changes. The demographic situation can be improved significantly if the maternity (family) capital is paid after the birth of each child, starting with the firstborn, and if the list of options for its utilization is expanded and includes child support, parenting, and payment for housing and utilities services.

Actual average monthly nominal accrued salary of employees at agricultural organizations in 2013 was twice below the

average salary in the economy of the Republic, and 3.3 times lower than in mining industries. It is equal to 1.7 subsistence levels of the able-bodied population. In all the rural areas, except for Syktyvdinsky and Priluzsky districts, wages are significantly below the subsistence level of the able-bodied population. And the average monthly wages of agricultural workers as compared to the subsistence level is only 70–78% in peripheral rural regions such as Izhemsky, Ust-Kulomsky and Udorsky districts. Low wages have a negative impact on the efficiency and quality of labor; they reduce motivation, and do not provide the rural population with the sufficient level of income.

The rise of the incomes of the rural population is connected with the following factors: the diversification of the agricultural sector; the establishment of a decent and fair remuneration, which must not be lower than the national average; the expansion of the network of receiving and procurement facilities for the purchase of agricultural products, provision of its access to retail trade and food markets of cities and regions; the changes in the principles of determining the subsistence level in accordance with the current level and structure of consumption rather than with the level of physiological survival; the differentiation of the minimum wage across the country, in the North its amount must be higher; the involvement of staff in the management of the enterprise and the extension of employee participation in solving the problems of ownership and in the distribution of income.

The most acute problems in the labor market in peripheral rural areas are as follows: the high level of unemployment; underemployment; the large number of inefficient economic and technologically equipped workplaces; the insufficient adaptability of educational system to the requirements of the labor market concerning the demand for professional and skilled labor; insufficiently developed infrastructure market.

In the years of economic reforms the situation in the social sphere of the village worsened due to the following reasons: reduction in the construction of residential housing; reduction in the construction of the facilities of healthcare, education, culture, consumer services, engineering and transport infrastructure, as well as the reduction of funding of social institutions. Many schools and kindergartens, shops, catering companies, clubs and comprehensive receiving offices were closed down. During the restructuring of the network of budgetary institutions the emphasis was placed on saving public expenditure. As a result, the rural population of peripheral areas is worse off compared to the population of cities and suburban rural areas according to all the parameters that characterize the development of social infrastructure. The improvement of the quality of life of the rural population, the development of social sphere in peripheral villages should become a priority in territorial planning and management.

#### **Human resources in modernization**

The situation with staffing in the agricultural sector in the rural periphery is a

serious obstacle to the modernization of the industry. If in the 1980s there were an average of eight specialists with higher education and 40 specialists with secondary professional education per state farm, then currently an agricultural enterprise has only one specialist with higher education and five specialists with secondary professional education.

A questionnaire survey of heads and specialists of agricultural enterprises and peasant farms carried out in 2013 shows that 36.4% of specialists in rural periphery and only 8.3% of middle managers have higher professional education. The level of skill of livestock breeders is very low: only 2.8% of breeders have the title “First-class master of animal husbandry”, and as for milking machine operators, they are not awarded such title at all. At that, 40% of workers did not attend retraining and advanced training courses. The proportion of specialists with higher education in other agricultural territories amounted to 41.4%, the share of specialists with secondary vocational education was 35.8%, the proportion of middle managers with higher education was 47.1% and with secondary vocational education – 23.5%. 61.1% of organizations have first-class drivers, 70.7% have the title “First-class master operator” (*tab. 1*).

The staffing for modernization and innovation development of agriculture requires implementation of a set of measures, such as: the development of targeted programs for staffing of the agricultural sector at the level of agricultural enterprises, municipal entities and region; the

Table 1. Results of the survey assessing the level of education of staff in agricultural organizations in the peripheral regions of the Komi Republic\*, %

Staff	Higher education		Secondary vocational education		I class		II class	
	Peripheral areas	The rest of the territory	Peripheral areas	The rest of the territory	Peripheral areas	The rest of the territory	Peripheral areas	The rest of the territory
Specialists	36.4	41.1	48.5	35.8	-	-	-	-
Middle managers	8.3	47.1	66.7	23.5	-	-	-	-
Tractor drivers / machine operators	-	-	-	-	40.6	37.9	37.5	33.3
Drivers	-	-	-	-	25.0	61.1	16.7	13.9
Livestock breeders	-	-	-	-	2.8	12.3	34.7	15.1
Milking machine operators	-	-	-	-	-	70.7	46.9	19.5

\* Compiled using the data of the questionnaire survey.

transition to the target training, retraining and advanced training of workers and specialists; gradual transition to the system of lifelong agricultural education consisting of several educational levels for the rural youth; the expansion of the system for the training of skilled specialists at the leading agricultural universities, and for the training of workers at the district and interdistrict vocational schools; the promotion of involvement of young professionals in the agricultural sector; significant increase in the income of agricultural workers, the possibility of obtaining main social benefits, the improvement of road and transport infrastructure; the organization of advanced training of farmers, managers and specialists of agricultural companies at least once in three–five years.

### Role of science in the modernization and innovation development of the agricultural sector

Agro-economic science is a crucial element in the modernization and innovation process; its results are used in production in the form of new varieties of plants, breeds and species of animals and fowls, new or improved food products, materials, new equipment, new technologies in plant cultivation, livestock breeding and in processing industries, in the new forms of organization and management, in the new approaches to social services that improve the efficiency of production.

Science, science-intensive technology, and vigorous innovation activity provide up to 80–85% of economic growth in the countries that have a well-developed

agricultural sector. As for Russia, each year up to 40–50% of its scientific and technological developments in agro-industrial production are not implemented into practice. Less than 10% of agricultural enterprises implement technological innovations, and not more than 12% of farms use modern intensive resource-saving technology [8, p. 28]. The level of implementation of scientific achievements was 65% in 1990 [10, p. 113].

The share of agro-industrial enterprises that are the most dynamic consumers of innovations is only 10% in the Komi Republic. Scientific and technological developments are implemented most poorly in the agriculture of peripheral areas. A questionnaire survey of managers and specialists of agricultural enterprises and peasant (farm) enterprises has shown that they assess the use of innovation in genetics

and selection as “very poor” – 24.9%, “poor” – 33.3%, “average” – 42.1%; the use of innovation in technology and equipment is assessed as “poor” by 20.2%, “average” – by 60.7%, “good” – by 19.1%; the use of organizational- economic and managerial innovation is assessed as “very poor” by 32.6%, “poor” – by 38.3%, “average” – by 29.1% (*tab. 2*).

For more than a hundred years agricultural science of the Republic has played an important role in the development of agriculture in the North. The progressive development of agricultural science was observed in the 1950s–1980s. Thirty-six scientists including 10 doctors of sciences and 26 associates with a Ph.D. carry out scientific research on the development of the agricultural sector. The doctors of sciences include five doctors of agricultural sciences, three doctors of economics, and

Table 2. Results of the 2013 questionnaire survey of managers and specialists of agricultural business entities concerning the use of innovations on the 5-point scale, %

Assessment	Innovation in genetics and selection			Innovation in technology and equipment			Organizational- economic and managerial innovation		
	Agricultural organizations located in peripheral areas	Agricultural organizations located in the rest of the territories	Farm enterprises	Agricultural organizations located in peripheral areas	Agricultural organizations located in the rest of the territories	Farm enterprises	Agricultural organizations located in peripheral areas	Agricultural organizations located in the rest of the territories	Farm enterprises
Very poor	24.6	4.2	-	-	-	-	32.6	8.3	-
Poor	33.3	5.9	-	20.2	-	-	38.3	10.1	-
Average	42.1	49.2	88.9	60.7	47.2	68.7	29.1	30.4	81.7
Good	-	30.5	11.1	19.1	42.6	22.2	-	40.9	18.3
Excellent	-	10.2	-	-	10.2	9.1	-	10.2	-

Compiled according to the data of the questionnaire survey.

one doctor of veterinary sciences. The composition of the associates with a Ph.D. is as follows: ten – in agricultural sciences, eight – in economics, six – in biological sciences, and two – in engineering. In the period of market reforms, due to the reduction in funding of science and salaries of researchers, there was an outflow of young scientists and a change in the age structure of scientific personnel. Currently, in the scientific organizations involved in agricultural research in the Republic the proportion of academic staff aged over 60 is 41%, including associates with a Ph.D. – 42%, doctors of science – 100%. The average age of associates with a Ph.D. has reached 58 years, and doctors – 70 years.

At present it is especially important to promote interdisciplinary research on the integrated development of rural areas. As the experience of developed countries shows, it can be done through the establishment of a leading research (educational) institution that works in close cooperation with research institutes and universities of the Republic, with the expert community, the information and advisory service and regional and municipal authorities.

The Komi Republic lacks an integral system for scientific support of sustainable agricultural and rural development. There is no leading research institute (higher educational establishment) involved in scientific research on the sustainable development of rural areas; there is no expert community of scholars, professionals, who would evaluate the efforts of the state and municipal authorities aimed to develop rural economy and infrastructure. The attitudes of the

public and of all the branches of government toward science should be changed radically. The coordination of research and its orientation on commercialization will help to form a social order to science for the conceptual development of different scenarios of technological and socio-economic development in the agricultural sector and rural territories in the future.

The efficiency of scientific support in the agri-food sector can be improved and sustainable rural development promoted if the following measures are implemented: first, it is necessary to determine the leading research institute; then – to increase state funding of basic research and the most important applied developments that are focused on quick results; then – to develop and adopt the procedure for use of scientific developments in production, the terms of their funding; to create an extra-budgetary fund for R&D based on the allocations from agribusiness companies attributed to production costs; to change the conditions of the competition for research and development, taking the novelty and expected effect, rather than the minimum price, as the basis. Government support should be allocated, as a priority, to experimental-production farms that test the practical application of scientific and technological developments in specific conditions. The former Agricultural Research Institute under the Russian Academy of Agricultural Sciences (the Institute is integrated into the Russian Academy of Sciences) can be chosen as the leading research institution on sustainable agricultural and rural development of the Republic. The priority directions of fundamental research

and major applied developments will be connected to the recovery of soil fertility, development of technology for the production of organic products, the breeding of early and medium early varieties of potato capable of tuberization in the conditions of long daylight, the breeding of forage plants that are optimally adapted to the specifics of the North, the substantiation of effective inter-sectoral linkages of agriculture and forestry, manufacturing industries, various forms of cooperation and integration, the elaboration of a science-based concept, a strategy for sustainable development of rural areas, the substantiation of modernization in all the spheres of rural economy and its infrastructure.

#### **Development of advisory support in agriculture**

Information and advisory service (IAS) is among the most important factors that promote modernization in agriculture. The role of IAS is to transfer information on research, technology and market to agricultural and agri-food enterprises, peasant farms and individuals; to implement breeding and genetic developments, to introduce efficient machinery and equipment, resource-saving technology, and advanced domestic and international production experience.

A well-organized system of information and advisory support helps to describe fully and accurately the external and internal environment of a business entity, to make the optimal management decision for each situation, to reduce the risks in the activity and to ensure sustainable development of agricultural enterprises and farms.

The analysis of the existing organization of IAS shows that the main factors hindering the development of information and advisory support of the agricultural sector are as follows: the shortage of personnel in the service; the lack of funds for payment of consulting services; insufficient relationship between information and advisory service and regional authorities for management and maintenance of regional agro-industrial complex, scientific, educational and information institutions; the absence of IAS at the municipal level.

We carried out a survey of managers and specialists of agricultural enterprises and peasant farms in 2013 for the purpose of studying the current state of affairs in the information and advisory support of the agricultural sector and improving it. The majority of respondents were managers of small and medium enterprises and farms. As for managers of large agricultural enterprises, practically all of them did not respond to the questionnaire; apparently, they do not require advisory support. The analysis of the questionnaire results has shown the following:

- customers received the main information (almost half of it) from the Ministry of Agriculture and Food, at the departments of agriculture in the districts and cities, and also at seminars, meetings and training courses. Almost two thirds of respondents did not apply for information to research and educational institutions. These organizations received suggestions concerning the improvement of the quality of rendered services;

- half of the respondents did not apply to the Information and Advisory Center at the Institute for Retraining and Advanced Training of Workers of Agro-Industrial Complex of the Komi Republic about the provision of services to solve the problems that arise in the production process;

- information about the demand for agricultural products and their prices in local and regional markets, information about the prices for material resources, about new technologies, breeding and genetic innovation and about the current normative-legal acts is of the greatest interest to agricultural producers;

- the sociological survey has shown that advisory services, which agricultural enterprises and farms provide, are most preferable; the visits by specialists of advisory services of agricultural enterprises and farms are time-consuming and require large financial expenditures;

- agricultural producers show considerable interest in advisory activities such as the introduction of innovation, development of business plans, strategies for development management, development and evaluation of innovative-investment projects, assistance in solving specific problems, and agree to pay for these consulting services;

- when studying the promising legal forms of information and advisory system, the respondents expressed a preference for advisory services that are part of the Ministry of Agriculture and Food of the Komi Republic and municipal departments of agriculture [3].

The proposed system of information and advisory support of the agricultural sector of the Republic consists of the regional and interregional levels that work in close cooperation with scientific and educational organizations, authorities and information agencies. It is expedient to extend the use of information and advisory system established to support the agro-industrial complex to other sectors of the rural economy and to the maintenance of rural residents.

Mechanisms of state regulation of modernization processes promotion

The agriculture of the northern peripheral areas cannot be considered from the viewpoint of gaining profit that would be sufficient for expanded reproduction. The agricultural sector is connected with social sphere and can only develop if it is supported by the state. Subsidies allow agricultural producers to earn income in addition to revenue from sales of products, and it does not affect the growth of food prices.

The analysis of the existing financial support shows that its significant amount is allocated to large agricultural enterprises that have more and better resources at their disposal, and also to suburban areas. Moreover, this support is not always proportional to the volume of agricultural products produced. The existing amount of financial support does not allow the industry to be developed on the basis of innovation; moreover it does not help to curb production decline. The allocated amount of budget support does not take into account the contribution of the rural periphery in the production of organic

and whole foodstuffs, the specifics of agricultural specialization, the current state of facilities, equipment and resources in the industry, the level of development of the transport and social infrastructure. The main burden of financial support of agricultural producers falls on the regional budget. In order to increase profitability and investment opportunities, it is necessary to increase the amount of direct state support of agricultural production in 3–4 times. Government investments will be also necessary for boosting the modernization of industry and infrastructure in rural areas.

The adoption of the Federal Law “On reindeer husbandry in the Russian Federation” and the development of a similar federal program will contribute to the sustainable development of reindeer herding and employment of indigenous peoples. The federal budget funding of the program for development of reindeer husbandry will increase the animal population, improve the efficiency of reindeer skins processing and the production of endocrine-enzyme raw materials.

This sphere requires active support from the Government of the Komi Republic, in particular, it is necessary to consider the possibility to let out forest pastures on a long-term lease to reindeer farms; to introduce additional monthly payments to veterinary professionals; to create a base for the processing of products of reindeer breeding in cooperation with other regions; to organize tourism related to reindeer herding.

In the conditions of Russia’s accession to the WTO and related restrictions of bud-

get support and allocation of its subsidies to the reduction of direct government support, in 2013 there was a decline in the profitability of products (except for poultry) (*tab. 3*).

Russia’s accession to the WTO will require that the restrictions in the level of support for the “yellow basket” be removed for the northern and Arctic areas engaged in agriculture in extreme conditions. The removal of restrictions on the support of agriculture will increase profitability, the salaries of employees of agricultural production; it will also provide their employment, increase investment opportunities and accelerate the modernization of animal husbandry and reindeer herding.

It will be necessary to enhance the role of long-term preferential loans in accelerating the modernization and innovation development of the agro-food sector and to exempt agricultural companies and farms from taxes.

The regional and municipal authorities and managers of agricultural business entities should promote domestic demand in order to enhance the sales of local agricultural products, improve the competitiveness of agricultural enterprises and peasant farms. It can be achieved by establishing a contract system that makes local products a priority when purchasing products for regional and municipal funds; the products are used for providing free meals for children and schoolchildren and for providing the needy with food with the use of food ration tickets. It will be also necessary to eliminate the monopoly of procurement, intermediary and processing organizations

Table 3. Profitability, unprofitability (-) of production in the agricultural organizations of the Komi Republic in 2013, %

Indicator	2010	2011	2012	2013
Profitability of the whole products	12.5	13.3	12.7	5.2
including:				
plant cultivation	-13.5	-6.8	-7.2	-17.6
animal husbandry	15.3	15.2	14.9	2.1
Potato	11.2	-7.9	2.7	-1.4
Field vegetables	-8.7	-56.3	-38.6	-25.0
Vegetables grown under cover	-21.7	4.0	3.4	-23.2
Unprocessed livestock products				
Milk	10.1	9.0	7.6	-35.5
Beef	-28.8	-21.4	-20.7	-41.0
Pork	15.4	10.8	9.3	-26.2
Venison	51.7	62.8	61.4	19.2
Poultry	62.9	22.7	41.5	75.3
Egg	10.3	16.0	14.6	-2.1
Sales of processed products				
Dairy products	-48.3	-47.8	-41.4	-27.7
Cattle meat	-48.3	-47.8	-44.3	-53.7
Pork	6.3	9.6	9.1	0.3
Venison	9.6	9.7	9.5	-0.3
Poultry	36.6	31.1	32.6	31.1
Source: annual statements.				

by transferring the cycle of production, processing and sales to the cooperative basis.

The study of the characteristics, capabilities, main directions of acceleration of modernization in the agriculture of the northern peripheral regions in the Komi Republic allows us to draw the following conclusions.

1. Reforms in the agricultural sector were accompanied by the destruction of productive capacity, the reduction in the production of all kinds of agricultural products, the deterioration of the standard of living of the peasant community. Peripheral rural village is experiencing a systemic

crisis. Current trends in the agricultural sector can lead to its deterioration and to the abandonment of rural areas that have been inhabited for centuries.

2. The existing opinions arguing that there is no prospect for the development of the agricultural sector in the rural periphery, or that it is expedient to use the fly-in fly-out employment schemes to cultivate agricultural land, or that it is necessary to return it to nature are ill-grounded and inadmissible, as well as the opinions concerning the reorientation of employment of the local population from agricultural to alternative activities.

3. The risks and threats of collapse of the agrarian sector in the rural periphery and the creation of large agricultural enterprises in urban and suburban areas are connected with the following: the inability to ensure food security in the country and its regions, to produce organic products; negative environmental impact in urban and suburban areas, and negative environmental impact on the health of consumers of food products; huge public expenditure on the employment of farmers in non-agricultural activities.

4. Peripheral rural areas have the following prerequisites for technological and socio-economic development of the agrarian sector: the availability of labor resources, natural fodder base (large floodplain meadows), the possibility of production of organic products, the demand for fresh local foods. The industrial character of economic development in the Republic allows substantial financial resources to be allocated for the modernization of the sector and integrated development of rural areas.

5. A set of measures is proposed in order to overcome the protracted crisis and shift to sustainable development of the agricul-

tural sector in the rural periphery; these measures are connected with the improvement of living conditions of peasants; the provision of agricultural production with personnel, research, information and advisory support; the creation of economic conditions for an effective system of state support; elimination of monopolism by encouraging cooperative forms in the fields of processing and sales of products; the promotion of domestic demand for local products.

6. The state and municipal authorities of the Komi Republic should consider the recommendations concerning the balanced development of the agricultural sector, the improvement of state regulation of modernization in the peripheral Northern and Arctic territories in the new environment as the scientific basis for the development of legal acts and for the introduction of changes in the conditions and mechanisms of financial support of the State Program for development of agro-food sector in 2013–2020.

7. The integrated development of peripheral rural territories should be considered a long-term priority for the state and municipal authorities.

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