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FORMATION AND DEVELOPMENT OF THE ROTATIONAL SYSTEM OF FARMING IN THE NOVOSIBIRSK REGION

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Abstract: *The scientific research considers the top priority areas of the development of the rotational system of farming under conditions of the agriculture modernization. As a result of synthesis and generalization of researchers' theoretical formulations, the work defines the rotational system of farming and reveals its peculiarities. It determines factors of the need to form and apply the rotational system of farming in the Novosibirsk Region. It develops the organizational and economic mechanism required for forming and applying the rotational system in agriculture, offers and tests practical recommendations on applying the rotational system in agricultural organizations of the Novosibirsk Region. The organizational and economic mechanism of applying the rotational system of farming is considered as implemented if positive results are achieved from its applying both in rotational teams and in the agricultural organization, as a whole. The offers developed during the research allow to increase the efficiency of farming on the basis of compliance of agrotechnical terms by improving the organization of labor processes, the maximum use of the agricultural equipment potential, increase in the labor efficiency, establishing the normal schedule of work and rest due to the reduced shifts, and the absence of the necessity to get to the work place every day.*

Key words: *rotational system of farming, organization and economic mechanism, non-arable agricultural lands, equipment and material procurement, migration of agricultural population.*

1. INTRODUCTION

Today one of the key problems of the development of the agro-industrial complex of the Russian Federation is the recovery of unused lands and increase in the cultivated area through them. This problem requires the development of such system of farming for the agro-industrial complex that will allow to put unused lands into operation,

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decrease unemployment in the village, and decrease the migration of the rural population of working age to cities. The fall in the 2014 economy brings these problems to the forefront.

The rotational system of farming will allow to use to the maximum the current opportunities to return the non-arable lands to the economic turnover and will contribute to the increase in the volume of agricultural production.

The urgency of the above defined the selection of the thesis theme and basic areas of the research.

Researches in the area of forming and developing systems of farming are based on the works of such Russian and foreign authors as A.I. Altukhov, K.P. Lichko, O.A. Rodionova, F.A. Saifullin, L.P. Silaeva, and N.E. Sharova [1;11;14-16;20].

As applied to the modern conditions, separate issues of this problem in Siberia are revealed in works of N.F. Vernigor, A.M. Zubakhin, B.S. Koshelev, V.A. Kundius, I.V. Kurtsev, P.M. Pershukevich, A.T. Stadnik, D.V. Hodos, S.A. Shelkovnikov, and L.A. Yakimova [5; 7-10;13;18;21-22].

The rotational method of national industry was researched by such researches as O.P. Andreev, V.V. Bazhenov, G.P. Bogomiakov, E.V. Grigorash, N.A. Maslakov, and A.N. Kharitonov [2-4;6;12;17].

Worthily estimating the contribution of researchers in the development of this theme, it is necessary to note that today issues related to forming and applying the rotational system of farming require close attention and wide practical use.

2. METHODOLOGY

The goal of the research is to form and apply the rotational system of farming.

The object of the research is economic interrelations that occur in the process of forming and applying the rotational system of farming.

The subject of the research includes factors, principles, and tendencies that have an impact on applying the rotational system of farming in the Novosibirsk Region.

The object of observation is agricultural organizations of the Novosibirsk Region.

Theoretical and methodological basis of the research included scientific works of researchers on the problem under research, publications of practical conferences, methodological and reference materials of the Federal Service of State Statistics and Territorial body of the Federal Service of State Statistics in the Novosibirsk Region, results of monitoring the state of social and labor area of the village of the Novosibirsk Region, regulatory reference materials of the Rosinformagrotech Federal State Research Establishment, enactments, program documents of management bodies, reports about financial and economic state of goods producers of agro-industrial complex of the Novosibirsk Region, and other resources.

Depending on the solved tasks, the following research methods were used: monographic, abstract and logical, economic and statistical, calculation and constructive, and method of expert estimates.

The informational basis of the research includes official materials of the territorial body of the Federal State Service of State Statistics in the Novosibirsk Region, information of the Ministry of Agriculture of the Novosibirsk region, enactments of the Russian Federation, bodies of the executive and legislative power of regions, scientific publications on the problem under study, and other resources.

3. RESULTS

1. In the academic turnover the notion of the rotational system of farming was introduced as a component of the system of farming performed on the land remote from the central farm, rented by more efficient goods producers, and based on the rotational method by creating a rotational camp with the conditions required for work.
2. Factors that stipulate the need to form and apply the rotational system of faming in the Novosibirsk Region were defined. They include the annual decrease in the processed areas of the field and need to return them to the economic turnover, insufficient equipment and material procurement of agricultural organizations that does not allow to perform works within the optimal terms, and the need to decrease the migration of the population from rural settlements to cities. Involvement of lands in the turnover will decrease the level of the unemployment and increase the welfare of the rural population.
3. The model of the organizational and economic mechanism of applying the rotational system of farming was developed. It includes the following elements: defining the reasonability to apply the rotational system of farming, preparing to applying the rotational system, establishing of internal economic interrelations between the central management and the rotational team, operative management of the rotational system of farming (formation of the current economic mechanism), forming of the material interest, and accounting and control.
4. Practical recommendations on applying the rotational system of farming were developed. They can serve as a basis for transferring of the interested agricultural organizations to the rotational system. Practical recommendations include the following chapters: general provisions, preparing for applying the rotational system of farming, equipment and material procurement, organization and payment for the labor of rotational teams employees, social and everyday provision, defining expenses for applying the rotational system of farming, defining sources of financing related to applying the rotational system of farming, and efficiency of the rotational system. When applying the rotational system of farming, it will be possible to generate additional 1,399.7 thous. tons of cereal in 2020, and 2,152.1 thous. tons - in 2025.

4. DISCUSSION

4.1. Theoretical Basis of Rotational System of Farming

The majority of the modern publications introduce the rotational method as a form of "implementing the labor process" instead of the notion "method to organize works" applied earlier. New formulation accurately relates this method to labor relations. However, in our opinion, it is incomplete. It does not reflect peculiarities of areas. Defining the rotational method as a special form of "implementing the labor process" is rather applicable for the gas and oil industry. However, this is not sufficient for agriculture. Due to its peculiarity, the notion "rotational system of farming (agricultural production)" is more suitable, because the production is above all a process of creating products. Agriculture requires the system approach that takes into account its peculiarities, namely, dependence on the nature and climate conditions, and incompliance of the work period with the production period.

The rotational system in agriculture is applied under the considerable remoteness of the cultivated territories from the location of the agricultural organization under non-reasonability to perform works according to the existing system as well as for the purpose of decreasing agro-technical terms when there is no sufficient volumes of relevant labor and material and technical resources.

To our mind, today in agricultural organizations of the Novosibirsk Region it is necessary to apply the inter-regional rotational system of farming, when in order to perform agricultural works, employees living on the territory of the Novosibirsk Region (usually within one district) are hired. It is characterized by short movement of personnel, short (up to 7-10 days) duration of rotations, stable transport link and connection between basic settlements, as well as the availability of the required production and social conditions in the places where agricultural works are performed.

After studying the labor legislation, the evolution of the notion of the system of agricultural production, opinions of various researchers, as well as on the basis of scientific researches of the author on this issue, the following definition was formed: the rotational system of farming is a component of the system of farming performed on the lands remote from the central farm, rented by more efficient goods producers, and based on the rotational method by creating the rotational camp with the conditions required for the work.

4.2. Factors Defining the Necessity to Form and Apply Rotational System of Farming

Return of the Non-arable Areas to the Economic Turnover, their More Efficient Use. The area of non-arable agricultural lands and unused pastures annually increases in the Novosibirsk Region. Thus, in farms of all categories of the Novosibirsk Region the cultivated areas of agricultural crops for the 2013 yield were 2,415.0 thous. ha, or only 73.5% of the areas in the year of 1993. Herewith, the negative tendency goes on. After

considering changes of the cultivated areas of the region districts, it is possible to make a conclusion that in 2013 the seeding area of some of them decreased by more than 50% as compared to 1993. This process is caused by the decrease in the number of land users as well as the lack of monetary and technical means for keeping agricultural farms ready for use.

Pastures become non-demanded because the cattle stock in farms of all categories tends to decrease. As a whole, in terms of the areas, in 2013 the volume of agricultural products in the Novosibirsk Region was RUB 66.4 bln. in actually acting prices, and as compared to 2012 it increased by 18.6%, including RUB 37.9 bln. (by 19.6%) in agricultural organizations. However, these indicators must not be referred to the positive tendency because in 2012 due to the anomalous drought the yield of cereals decreased twice, and problems related to forage conservation occurred. That is why the return of non-arable lands of the cultivated area to the economic turnover is a main factor of the necessity to apply the rotational system of farming.

Updating Machines and Tractors Park. The Novosibirsk Region displays the tendency on decreasing the total number of the machines and tractors park. Particularly, over the latest 5 years the number of tractors of all models decreased by 20.6%. The number of harvester-threshers decreased by 22.6%, and the number of forage harvesters decreased by 18%. Herewith, the prevailing number of the existing equipment exhausted their resource (the term of service is 10 years and more). The economic fall of 2014 will contribute to the considerable growing of prices for foreign components and equipment. In 2015 the price of repair parts is expected to increase by 8-18%. In addition, the Russian enterprises that supply equipment for agriculture will also increase their prices on internal markets. That is why only large profitable agricultural organizations will be able to buy modern equipment. Such organizations that apply modern resources-saving technologies of farming and multi-operational highly production equipment can return the abandoned lands to the economic turnover and process them on a qualitative level and in time. It is especially important for the zone of risky farming when non-compliance with agro-technical terms immediately affects the yield of agricultural crops.

Decrease in the Migration of Population from Rural Settlements, Keeping Rural Territories from Desolation. By the end of 2013 the Novosibirsk Region had 508 agricultural production organizations. Their annual bankruptcies cause the involuntary unemployment. The destroyed infrastructure, hard work, salary that is the lowest among employees of all sectors of economy, which leads to the extreme poverty, contribute to the migration of rural population to cities. As on the beginning of 2013 the number of population in the rural area of the Novosibirsk Region was 599.5 thous. people. As compared to 2012, it deceased by 3.1 thous. people or 0.5%. The rotational system of farming will allow to decrease the migration of population from rural settlements. It will allow to keep rural territories from desolation.

Increase in the Level of Professional Education and Material Welfare of Rural Population. In 2013 the ratio of the rural population with professional education in the Novosibirsk

region was 40.1-50%. The level of incomes is rather low and cannot contribute to the extended reproduction of labor resources: tractor drivers get 1.5 of the living wage every month, cattlemen of cattle stock – 1.1, and machine milking operators – 1.2.

The rotational system of farming will allow to intensify the agricultural production, contribute to involving qualified personnel, increase the level of education and welfare of rural population, and, as a consequence, it will allow to decrease the level of rural unemployment that in 2013 was 9.5%.

4.3. Organizational Structure of the Rotational System of Farming

The rotational system of farming allows to use labor resources beyond the place of their permanent place of residence. Herewith, it requires the availability or organization of the interrelated system of production and residential bases and camps. We have developed the organizational structure of the rotational system of farming (Figure 1).

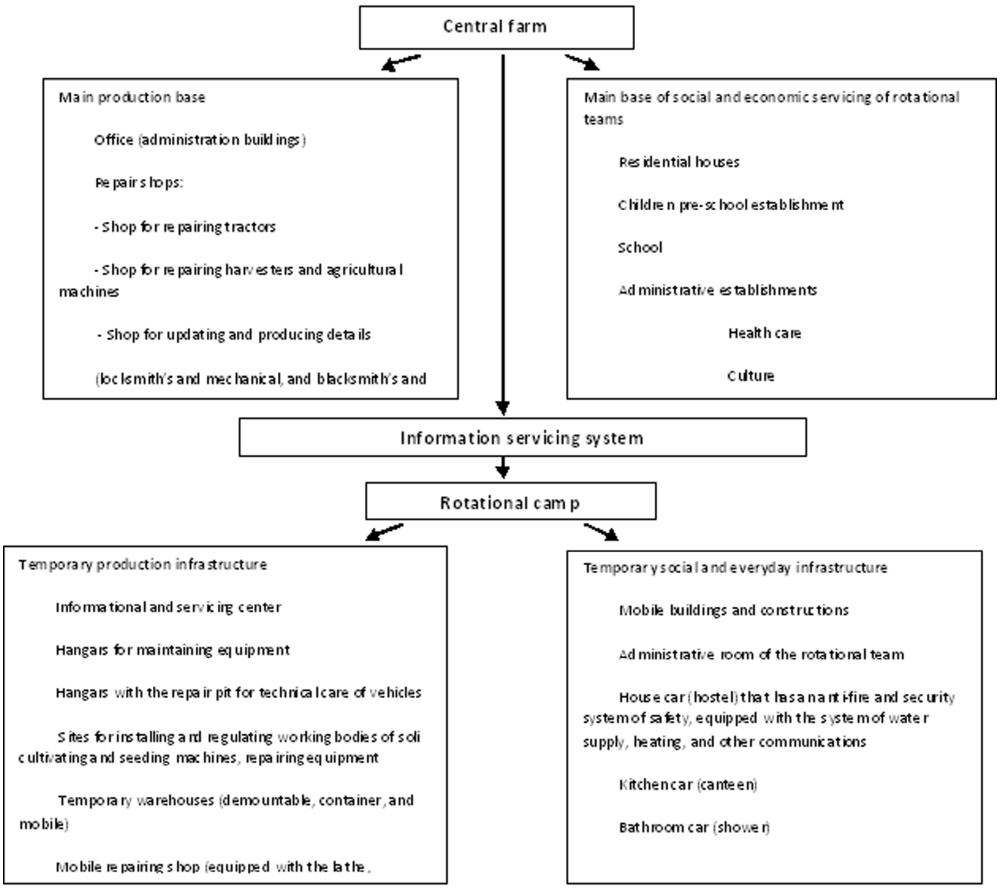

Figure 1: Organizational Structure of Rotational System of Farming

4.4. Organizational and Economic Mechanism of Applying Rotational System of Farming

The intercompany organizational and economic mechanism of applying the rotational system of farming must act as a system of the interrelated and mutually stipulated specific economic elements and areas (Figure 2).

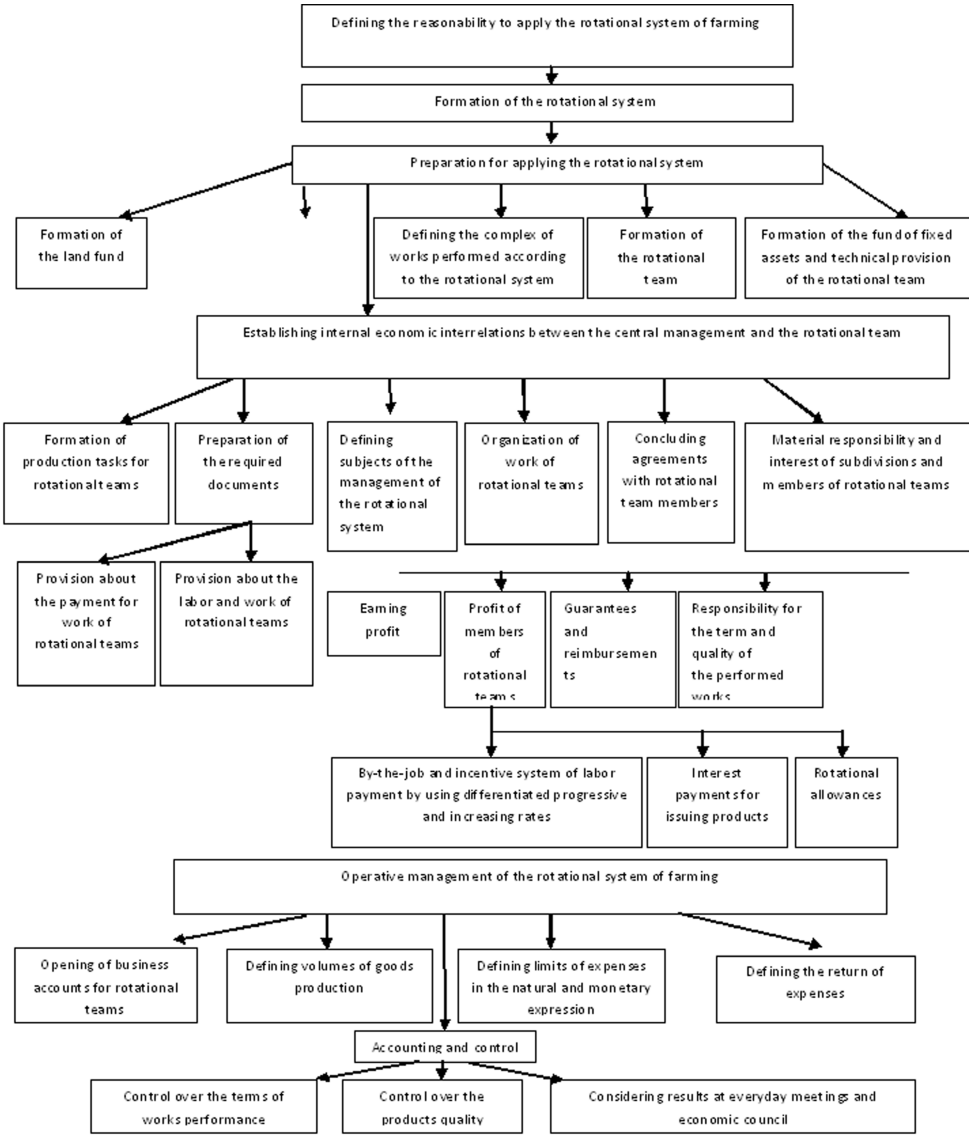

Figure 2: Model of Organizational and Economic Mechanism of Applying Rotational System of Farming

The reasonability to apply the rotational system of farming is based on the correlation of general expenditures of the existing and rotational system. General expenditures in case of the rotational system of farming are a sum of operational, capital and current expenses for keeping the rotational camp. Capital expenses are taken into account simultaneously and are related to acquiring and constructing objects of the production and social infrastructure of rotational camps.

We offered tools to define the current expenses when applying the rotational system of farming by an agricultural organization. The current expenses for keeping the rotational camp (E_c) are defined according to the following formula [19]:

$$E_c = N \cdot C_s \cdot C_{sp} \cdot E_e \cdot T_w \quad (1)$$

where N – number of mechanizers or combiners (depending on the type of performed works) involved in field works, persons,

- C_s – coefficient taking into account outsourcing employees in the field (additionally involved seasonal employees, ratio of the total number of mechanizers),
- C_{sp} – coefficient taking into account the number of the servicing personnel,
- E_e – specific current expenses to keep one rotational employee that include the wages of the servicing personnel; buying household items, food as calculated per one employee; energy consumption, etc., RUB,
- T_w – the term of performing field works in case of the rotational system, days.

Additional capital and current expenses related to applying the rotational system are compensated by the growth of the production volumes caused by more intensive use of the production potential.

It is necessary to start the preparation for applying the rotational system of farming from analyzing the economic activity of the organization. Then it is necessary to define a complex of works performed according to the rotational system, develop the required documents, form rotational teams, and calculate its equipment and material procurement.

The land fund is formed mainly at the expense of acquiring or renting of agricultural areas in the neighborhoods of ruined villages and bankrupted agricultural organizations but only after the preliminary estimation of the availability of fixed assets and labor resources required for cultivating these areas according to the rotational system.

Establishing in-company economic interrelations between the central management and the rotational team includes defining subjects of the management of rotational system, formation of operational tasks for rotational teams, preparation of the required documents, and concluding agreements with members of the rotational team. It provides material responsibility and interest of subdivisions and members of rotational teams.

Heads of the relevant subdivisions bear responsibility for economic planning, legal, material and technical, and informational provision of rotational teams. The head of the rotational team bears the responsibility for the term and quality of the performed works in fields, transportation of employees to and from the cultivated lands, everyday conditions, and operational discipline. An agreement is preliminarily concluded with him/her.

The income of rotational teams members is formed on the basis of the by-the-job and incentive system of labor payment by using differentiated progressively increasing rates taking into account interest payments for the issue of products and rotational allowances.

The payment for the labor of employees of machinery repair shops who are responsible for the state of equipment of the rotational team is organized on the basis of the successful operation of equipment. The fund of repairers' labor payment is created, and the percent of the deduction from the target income of every rotational team is defined. Conditions of payment are agreed. The decision about transfers is stipulated by the head of the rotational team taking into account losses of the working time of mechanizers and non-compliance with agro-technical terms.

Operative management of the rotational system of production organization or the current economic mechanism includes opening of business accounts for the rotational teams, defining the volumes of production and selling products, determining limits of expenses and defining their pay-off, as well as accounting and control.

4.5. Practical Recommendations on Applying Rotational System of Farming by Agricultural Organizations of the Novosibirsk Region

Practical recommendations on applying the rotational system of farming by agricultural organizations are meant to solve the occurring organizational issues and calculating basic technical and economic indicators when involving remote territories in the economic turnover.

In order to define the number of the required rotational camps, it is necessary to calculate the area of the territory where the rotational team will work. Then the area of the remote land must be divided by the obtained value. We know the optimal radius of the processed territory (5 km). Consequently, one rotational camp subject to the resources-saving highly efficient equipment can process about 8,000 ha within the optimal agro-technical terms due to the increase in the coefficient of the changeability, increase in the average hour output of tractors, harvesters and other agricultural machines, and decrease in the inter-shift delay of equipment. The main reasons of the latter include weather conditions, and free running of equipment, delayed supply of fuel, seeds, fertilizers, and technical malfunctions.

It is reasonable to start applying of the rotational system of farming in the Novosibirsk region from the Southern, Western and South-Western areas: Baganskiy,

Barabinskiy, Dovolenskiy, Karasukskiy, and Krasnozerskiy due to a number of reasons. Firstly, they are considerably remote from the city of Novosibirsk. Secondary, they are characterized by a low density of rural population. Thirdly, they have large areas of cultivated land. It allows to process fields by using powerful agricultural equipment. Fourthly, they are located in the zone of risky farming.

The developed practical recommendations on applying the rotational system of farming were tested in CJSC "Ivanovskoe" of the Baganskiy Area, CJSC "Studenovskoe" of the Karasukskiy Area, and "Rubin" LLC of the Krasnozerskiy Area. Let's consider the obtained economic effect through the example of CJSC "Ivanovskoe". The organization performs its activity according to the following areas: growing cattle stock, crop farming, production of flour and other products from cereal crops. It holds the third place in the Baganskiy Area according to the milk yield per 1 forage-fed cow – 2,878 kg, and the first place according to the average day growth - 831 g.

For the researched period CJSC "Ivanovskoe" displayed the tendency related to the increase in the area of agricultural farms, including pasture, due to the land rent (Table 1). In 2013 CJSC "Ivanovskoe" additionally rented 9,388 ha of agricultural farms in the ""Kolhoz Kozlovskiy" Agricultural Production Co-operative of the Barabinskiy Area that had a considerable area but due to the current crisis conditions it could not process it effectively. Thus, in 2011 they used only 2,600 ha for seeding spring cereal crops, 2,300 ha in 2012, and in 2013 the pasture was not cultivated at all.

Table 1
Dynamics of the Indicators of the Size of CJSC "Ivanovskoe"

Indicator	*2010*	*2011*	*2012*	*2013*	*Changes of 2013 in% as to*	
					2010	*2012*
Area of agricultural households, ha	32,238	32,238	33,385	42,773	132.7	128.1
Including cultivated area	18,150	18,150	18,150	28,244	155.6	155.6
Yield of cereal crops, centner/ha	7.2	8.1	7.3	14.5	201.4	198.6
Average annual cost of fixed assets, thous. RUB	13,9432	175,160	246,006	300,513	215.5	122.2
Average annual number of employees of the organization, persons	324	305	270	320	98.8	118.5
Including involved in agricultural production	304	292	255	301	99.0	118.0
Cattle population, heads	4,614	4,492	4,200	3,700	80.2	88.1
Including cows	1,450	1,500	1,500	1,500	103.4	100.0
Gross output of products, td						
Cereal	38,545	38,814	36,169	105,962	274.9	293.0
Milk	62,672	75,345	76,543	75,360	120.2	98.5
Increase in animals for growing and fatting	6,130	5,691	5,380	5,600	91.4	104.1
Price of cereal selling, RUB/td	494	525	806	563	114.0	69.9
Income from selling cereal, thous. RUB	19,041	20,377	29,152	59,657	313.3	204.6
Expenses for producing cereal, thous. RUB	12,800	21,745	24,564	38,598	301.5	157.1
Profit from selling cereal, thous. RUB	6,241	-1,368	4,588	21,059	337.4	459.0

In 2013 the total area of seeding of CJSC "Ivanovskoe" increased by 46% as compared to 2012. In absolute terms this is 7,494 ha.

The remoteness of the rented lands from the central farm is above 250 km. The rented land is cultivated according to the rotational system by forming one rotational camp.

Seeding works on the areas remote from the central farm were performed 20 hours per day by using the seeding complex "Tom-12" whose production capacity is 12.5 ha/h. Spring wheat was seeded for 10 days. The agro-technical terms of seeding decreased down to 50%. Cereal crops were harvested by using combiners "Don-1500B". In case of the 18-hours working day in the working mode of combiners, the production in the rotational team was by 38% higher as compared to other brigades of the agricultural organization. The fuel consumption rate decreased down to 60% as compared to the technology of soil processing used before due to the low energy-output ratio of the process, combination of technological operations and lack of free running of equipment.

4.6. Prospective Forecasting of Applying Rotational System of Farming by Agricultural Organizations of the Novosibirsk Region

In the fields where the rotational team worked by using resources saving technologies, the yield of the spring wheat increased from 7.3 up to 14.5 centner/ha. The expenses

Table 2
Comparative Efficiency of Cultivating Cereal Crops According to the Existing and Rotational System of Farming in CJSC "Ivanovskoe"

Indicator	Existing system of farming	Rotational system of farming	Changes (+, -)
Expenses per 1 ha, RUB,	4,104	3,496	-608.0
including amortization of fixed assets of the rotational infrastructure	0	84	84.0
Current expenses for maintaining the rotational camp	0	11	11.0
Labor payment with deductions for social needs	578	210	-368.0
Seeds	729	729	0.0
Fertilizers for chemical means of crops protection	104	104	0.0
Electrical power	185	151	-34.0
Oil products	1,283	495	-788.0
Maintaining fixed assets	1,175	1,630	455.0
Other expenses	50	82	32.0
Expenses for straw, RUB	328.3	279.7	-48.6
Expenses for cereal, RUB	3,775.7	3,216.3	-559.4
Yield, centner/ha	12	14.5	2.5
Cost of 1 td, RUB.	314.64	221.8	-92.8
Price of selling, RUB/td	563	563	0.0
Income, RUB from 1 ha	6,756	8,163.5	1,407.5
Profit, RUB from 1 ha	2,980.32	4,947.2	1,966.9

per 1 ha of the seeding area of cereals considerably decreased and the income increased (Table 2).

The observations showed that in case of the rotational system the time for the technical servicing of tractors and agricultural equipment was 4% of the shift time, and the delays did not exceed 5%.

In the future for the purpose of increasing the efficiency of the agricultural production CJSC "Ivanovskoe" plans to go on transferring to the rotational system of farming because the organization is already cultivating 28,244 ha of the area.

Table 3 shows the forecasting of the efficiency of applying the rotational system of farming when growing cereals in agricultural organizations of the Novosibirsk Region up to 2025.

According to our calculations, by 2025, as a result of applying the rotational system, 570 thous. ha of the cultivated areas will have been returned to the economic turnover for growing cereals, and the existing 1,148.72 thous. ha will be used more efficiently.

It means that the rotational system of farming will allow to obtain additional 1,399.7 thous. t. of cereal by 2020, and 2,152.1 thus. t. by 2025.

5. CONCLUSION

1. The rotational system of farming was defined as a component of the farming system performed on the lands remote from the central farm, rented by more efficient goods producers based on the rotational method by creating the rotational camp with the conditions required for work.

Table 3
Forecasting of Efficiency of Applying Rotational System of Farming when Cultivating Cereal Crops in Agricultural Organizations of the Novosibirsk Region

Indicator	*2020*		*2025*	
	Persistence forecast	*Forecasting taking into account applying of the rotational system*	*Persistence forecast*	*Forecasting taking into account applying of the rotational system*
Area of seeding, thous. ha	934	1433	806	1718
Yield, centner/ha	15.1	19.6	15.1	19.6
Whole yield, thous. t.	1,410.4	2,810.1	1,216.6	3,368.7
Price of selling, RUB/t	8,000.0	8,000.0	12,000.0	12,000.0
Income, mln. RUB	11,282.9	22,480.7	14,599.1	40,424.3
Expenses per 1 ha, RUB	8,006.4	4,919.2	10,218.4	6,278.3
Expenses for the whole area of seeding area, mln. RUB	7,478.1	7,052.8	8,232.9	10,790.7
Including for cereal, mln. RUB	6,879.8	6,488.6	7,574.2	9,927.4
Profit, mln. RUB	4,403	15,992.2	7,024.8	29,633.6

2. The factors that defined the need to form and apply the rotational system of farming in the Novosibirsk region were revealed. They include the annual increase in the area of non-arable agricultural lands – the cultivation area in farms of all categories of the Novosibirsk Region has decreased by 949.5 thous. ha for the last 20 years, and is 2,415 thous. ha; insufficient equipment and material procurement of agricultural organizations, migration of the rural population to cities – the number of the rural population is 599.5 thous. people. As compared to 2012 it has decreased by 0.5%, and by 14% since 1990.
3. The conducted analysis showed that large agricultural organizations that applied modern resource saving technologies and farming and multi-operational highly productive equipment could return the abandoned lands to the economic turnover. The rotational system will allow to speed up the process of intensifying agricultural production, contribute to involving qualified personnel and increase in the educational level of the rural population.
4. The structure of rotational system of farming was developed, subjects of management were revealed. It enables agricultural organizations to use the rotation on considerably remote worked territories taking into account all peculiarities of the industry.
5. The model of the organizational and economic mechanism of applying the rotational system of farming was developed. Its basic elements include organizational structure of the rotational system, management structure, and the availability of the required production factors; establishing of internal economic interrelations between the central management and the rotational team; material responsibility and interest of subdivisions and members of rotational teams; operative management of the rotational system of farming, and accounting and control. The tools to define the variable expenses when applying the rotational system.
6. Practical recommendations on applying the rotational system of farming were developed. They allow to solve organizational and technical and economic issues that arise when applying the rotational system on the remote lands, particularly such as equipment and material procurement and social and everyday provision of rotational teams, defining expenses for applying the rotational system and sources of its financing.
7. The economic effect obtained as a result of resting practical recommendations at CJSC "Ivanovskoe" of the Bagansk Area is the following: in the fields where the rotational team worked and used the resources saving technologies, the yield increased by 7.2 centner/ha and was 14.5 centner/ha, the agrotechnical terms of seeding decreased twice, and the propellant consumption decreased down to 60%. The expenses per 1 ha of area to sow the cereal crops decreased by RUB 608.
8. It was established that the rotational system of farming taking into account state subsidies in the amount of 50% of the expenses for the required equipment,

fertilizers, and oil products per every additionally cultivated hectar of the land under the current conditions was one of the most prospective. The program on subsiding expenses for working the land according to the rotational system of farming will allow to return 570 thous. ha or 60% of the cultivated area to the economic turnover. From introducing the rotational system of farming it is possible to obtain additional cereal in the amount of 1,399.7 thous. t. in 2020, and 2,152.1 thous. t. in 2025.

9. Prospects of further development of the theme lies in the formation of mechanisms for leasing out the land to more efficient producers, preparation of projects of the rotational system of farming for various nature and climate zones, and adopting enactments on the level of the Government of the Russian Federation.

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