ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Ecological And Economic Efficiency Use Of Agricultural Lands.

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ABSTRACT

The article is devoted to the rationalization of agricultural land and the acquisition of land management documents enabling the adoption of sound and effective decisions on the organization of use, protection of land and regulation of agricultural land use at the state level. The authors propose a specialized scheme for the land management of the district, with consideration of issues of importance and relevance only to agricultural land and agricultural land use. In the article, based on the results of elemental analysis, a conclusion is made about the correctness of the current direction of land use in relation to their ecological, economic and legal status. Analytical materials are the basis for the development of design solutions, but can be used separately from the scheme to provide land management functions.

Keywords: agricultural production, land, land management scheme, evaluation, efficiency.

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ISSN: 0975-8585

INTRODUCTION

Land plays a fundamental role in the life of society and every person. According to the current legislation, the land resources of Russia are classified as national property used and protected in the interests of the living population. Organization of use and protection of land resources of the Russian Federation and its individual regions is becoming increasingly important as the reconstruction of the economy and environmental management.

Sustainable socio-economic and effective development of rural areas determines the position of any state in the modern world economy and provides tangible benefits in solving food, raw materials and energy problems in the domestic and global markets. The established system of land resources management, which is based on measures for accounting, registration, evaluation, planning and organization of rational use of agricultural land, their protection, monitoring and land control, supported by appropriate land management support, legal and economic mechanisms of their implementation is the main link, ensuring the economic efficiency of the use of components of the land and property complex of the country, maintaining the state real estate cadastre, management of land resources of the state, the implementation of full land control.

The ongoing land reform has made major changes in the structure of land ownership and land use of agricultural production. However, these and other changes have not yet been fully reflected in economic and environmental results, although they are of social importance.

The need to streamline the organization of the use of agricultural land by methods of intra-farm land management is becoming increasingly important.

In the Russian Federation, the concept of land management includes measures to study the state of land, planning and management of rational use of land and their protection, describing the location and establishing boundaries of land management facilities on the ground, organizing rational use of land for citizens to implement agricultural production, and on the organization of territories.

Land management is carried out in the following cases:

1. Change in land use boundaries;
2. Provision and withdrawal of land plots;
3. Identification of disturbed lands damaged by water and wind erosion, mudslides, flooding;
4. Conducting measures for the restoration and conservation of land.

The land is divided into 2 types:

1. Inter-farm - affects the rights of 2 or more land users, resulting in the formation of new and streamlining of existing land use, eliminating the shortcomings of land use (cherepospolositsa, long-range earth, wedging).

Land allotment in kind and preparation of documents certifying the right to land.

2. On-farm - intra-farm organization of territories; is carried out within the boundaries of individual land uses for the organization of lands, crop rotations, the allocation of agricultural roads.

- The land management process includes:
- Initiation of an application for coordinating the location of the facility;
- Conducting preparatory works: collection, systematization and processing of collected materials, conducting their survey.
- Development of projects, land projections (the main stage): sketches, technical designs are made, various options of the land system are considered, the best one is selected, which corresponds to the rights and economic interests of the interested person (local government bodies, RF bodies).
- Review and approval of project documentation: the projects are approved by the owner (owner of

the land plot and the authorized executive authority of the subject of the Russian Federation), the head of the local administration (depending on the territory).

- Transferring projects to the area.
- Provision of land management documents: graphic and text parts. The approved project is mandatory for execution.

Land management is carried out at the initiative of authorized executive bodies of state power, local self-government bodies, landowners, land users, landowners or by court decision.

Information on land management is of an open nature, with the exception of information constituting state secrets and information pertaining to the identity of owners of land plots, land users, landowners or tenants of land plots.

Issues of land management in Russia are regulated by the Land Code of the Russian Federation and the relevant federal laws of the Russian Federation.

The organization of land use, the improvement of agricultural land use - the problem is complex and requires an integrated solution in conjunction with the organization of the use of other factors of production.

MATERIALS AND METHODS

Theoretical basis for the organization of agricultural land

One of the main mechanisms for the implementation of the state's land policy and regulation of land relations is land management. The system of land management in the opinion of Filippova T.A. is traditionally regarded as a sequence of interconnected cartographic, engineering and technical inventory work aimed at studying the state of land, including works on the organization of the territory, the establishment of boundaries of land management facilities in the area, which are carried out in accordance with the established procedure. These works are aimed at ensuring rational land use, protecting land, creating a favorable environment and improving landscapes. [8].

Land management by definition of one of the leading domestic scientists S.N. Volkova, provides for cadastral surveying, aerial surveying, topographical and geodetic, soil, geobotanical and other surveys and measurements, boundary surveying, development of proposals for rational land use, which allow collecting data on quantitative and qualitative parameters of land plots of the state territory. To ensure the reliability and reliability of the data, a certain procedure for certification of measuring and technical means has been introduced, which are used for surveying and measuring land for land use based on technical and technological standards. [3].

Based on the conducted survey, the land management documentation is compiled, which includes the schemes and plans of land plots, as well as cartographic and other materials of the land management projects. Land management is compiled for each land management object from the land management documentation. Information on the area of the land, the location of various types of objects and structures, as well as engineering systems and natural objects is contained directly in the plan of land. Such plans additionally include information on restrictions and encumbrances of the land plot, including indications on those parts of the land plot on which the right of easement operates. The plan of the land plot is necessary for the purchase and sale of land and other land transactions.

The foreign experience of Pennington, D.N., Dalzell, B., Nelson, E., Mulla, D., Taff, S., Hawthorne, P., & Polasky, S. (2017) shows that only on the basis of land management documentation, in complex that links legal, economic, social, environmental, technological and technical issues of creating and improving land use, it is possible to ensure an increase in the effectiveness of land reforms, legislative design and guarantee of land property rights, which is the main condition for economic development. [4].

At the same time, the analysis of the current situation in the field of land management in the opinion of Timonina S.A. (2014) points to a decline in the role of land administration in the implementation of the state's land policy, and the lack of a clear program for its development, legal, scientific, technical, financial and other security has become a deterrent to land reforms. [6].

The inefficiency of land management was drawn to the attention of Bryzhko V.G. (2013), where it is stated that in Russia "land management is not effectively organized from the point of view of general concepts, departmental functions and methods of implementation", and also that in order to stimulate the land market in Russia, including the agricultural land market, it is necessary "Government support in conducting land management." [1].

In this regard, the study of issues of land administration in the opinion of Jacques SA (2015) stated in the article state policy at the current stage of reforming the system of land legal relations will determine the most effective ways to organize the rational use and protection of land in the Russian Federation, plan for the future a clear land policy , as well as to establish mechanisms for regulating land relations that meet modern world trends. The study of these aspects of regulation of land use and land management is especially important nowadays, when many private land management organizations appeared in the market for provision of land management services, there are no rules, standards, procedures, technical regulations and scientific justification for land management, there are corporate conspiracies of private land surveyors. [14].

Resolution of this problem is possible by developing a special forecasting and planning document, called the scheme of land management of the district. In this study, it is referred to as a specialized scheme.

The scheme of land management of the district or rural settlement (district) is one of the types of land management documentation, the content of which is presented in art. 19 of the "Law on Land Management" [18]. The main purpose of this document is to identify the most effective, environmentally safe and socially oriented areas for the use and protection of land resources, the economically expedient development of various forms of management on the land, the formation of a multi structure economy, and also in information and reference support in the region.

The main purpose of the scheme is to provide conditions for the sustainable effective development of agricultural production and the management process by municipal authorities and the state.

- This is achieved by solving a number of problems:
- Preservation and enhancement of the productive properties of the land;
- improving the ecological status of agricultural land use;
- Ensuring favorable conditions for the use of land (ecological, economic, legal, organizational);
- Creation of an efficient land management system;
- Ensuring the rational use of agricultural land in market conditions.

Practical aspects of land management organization

Present time is characterized by permanent changes in agricultural land use and on-farm land relations. In this regard, it is advisable to limit the content of the land management scheme by solving a range of topical issues and obtaining as a result of such land management documentation that would facilitate the adoption of justified and effective decisions on the organization of use and protection of land and regulation of agricultural land use at the state level at the present time.

Such documentation can be provided by the proposed specialized scheme of land management of the district with consideration of issues of importance and relevance only to agricultural land and agricultural land use. [21].

ISSN: 0975-8585

The structural division of this scheme into two parts - analytical and project, is presented in Figure 1. Below we consider the scientific and methodological provisions for the development of the content of the proposed scheme.

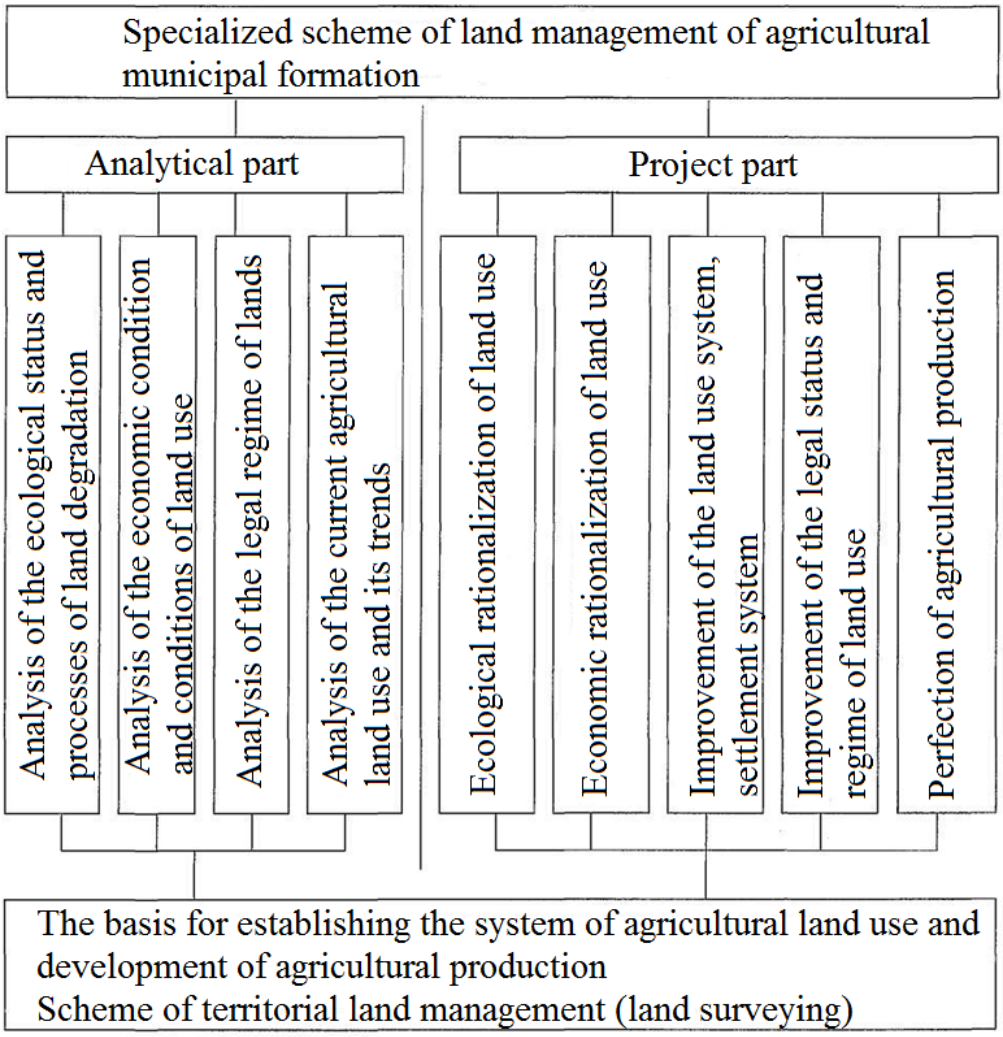

Figure 1: Contents of a specialized land administration scheme

Bioclimatic potential allows us to make a fundamental decision about the level and intensity: agricultural and livestock production. Affiliation to the agricultural group of soils and the degree of their degradation, depending on the development of erosion, pollution; and the influence of other anthropogenic factors makes it possible to take decisions on the specific form of the site and technology, its use.

This takes into account the presence and location of objects that restrict the use of adjacent lands or require a special regime for their use (water protection zone, coastal strip, disposal sites, etc.). The analytical part assumes an analysis of the ecological, economic and legal state of agricultural land use and the characteristics of its parameters. The structural model of the analytical part is presented in Table 1.

Analysis of the ecological status and processes of land degradation is carried out on the basis of studying natural conditions and their favorable or adverse effects on the use of land. Based on the data on bioclimatic potential and the ecological state of the lands, the suitability of the land is established for further use in the form of various agricultural lands or, on the contrary, their withdrawal from agricultural circulation.

Table 1: Structural model of the analytical part of the specialized scheme of land management

Elements of the analytical part	The main content of the work (solved issues)
1. Analysis of the ecological status of land use	Identification and formulation of characteristics: degradation processes; sources (objects) of land pollution; ecological condition of lands; land suitability for agricultural use
2. Analysis of the economic state of land use	Identification and characterization of land use conditions in the context of agricultural organizations: composition and ratio of land; labor and fund availability; quality (assessment) and land use efficiency; organization of the territory
3. Analysis of the legal regime of land use	Drawing up the characteristic of the use of lands: by forms of ownership; by types of use; on restrictions and encumbrances
4. Analysis of current land use of agricultural organizations	Study of land use parameters and identification of their shortcomings
Documentation for municipal formation-district, rural settlement: 1. Drawing (scheme) of the existing organization of territory and land use. 2. Scheme of land suitability for agricultural use (combined with a soil map and landscape-ecological zoning scheme). 3. The scheme of restrictions and encumbrances. 4. Explanatory note with the calculated tables for the elements of the analytical part.	

For these purposes are used; available soil maps, maps of restrictions and encumbrances, as well as materials obtained from an additional field survey. In this case, the assessment of the ecological state can be divided into two parts: the forecast of the state and the full-scale verification of the forecast. Due to a significant interruption in the conduct of special types of surveys or their absence, a forecast is made for the development of degradation processes. It is made on the basis of studying the materials of earlier conducted studies of the quality of land and natural conditions that contribute to the development of degradation processes, as well as the direction and technology of using individual economic plots. This allows you to make a forecast about the possible condition of land and the development of degradation processes. Based on the data of the forecast, the key areas on which field surveys are produced are selected: surveys. This approach in conditions of lack of financial resources allows obtaining satisfactory results on the ecological state, which was confirmed by the results of experimental design of a number of authors [17, 24].

Analysis, economic conditions and conditions of land use make it possible to evaluate its functioning as the most important factor of agricultural production. The conditions for the use of land include the size of industries and the specialization of production, labor, fund and energy supply of farms. At the same time, negative phenomena and processes that reduce the effectiveness and efficiency of use and the value of land are indicated, as well as factors that increase these indicators;

When analyzing the availability of machinery, not only general purpose agricultural machinery is considered, but also specialized ones intended for soil conservation, restoration or reclamation works, and the possibility of their lease. At the same time, the limits of the interchangeability of living and mechanized labor are taken into account. Therefore, technology balances are developed along with workforce balances. In developing the balance of the workforce, the possibilities of attracting employees from outside are taken into account, including taking into account rental of equipment by the seasons. An important balance is the determination of the availability of grain equipment, storage facilities. The balance of nutrients allows you to determine the conditions for the reproduction of fertility. In the preparation of balances, the costs of attracting resources from the side and the loss of production from the shortage of machinery, equipment, warehouses, manpower and fertilizers are calculated. This balance allows us to outline measures to improve the effectiveness and efficiency of land use. Taking into account the quality of the conditions of use and the quality of land, the efficiency of using individual land plots is determined. Efficiency is determined on the basis of establishing the profitability of cultivating the main or several commodity crops. At the same time, it is set taking into account the average conditions of land use for the area and for each individual farm. Comparison of these two indicators allows us to determine the direction of rationalization of land use.

Analysis of the legal regime of land use presupposes studying the forms of ownership, possession and use of lands in the context of individual agricultural structures and lands, restrictions and encumbrances in use. The shortcomings of the legal regime that prevent the increase of the efficiency and value of the land are revealed. A clear legalization of land relations and the conditions for organizing the use of land will help stabilize agricultural land use and agricultural production for a certain period. In the context of private ownership of land, it becomes important to identify restrictions on the rights to use their lands and formalize the rights of limited use of certain land plots for their own purposes (easements).

Analysis of the existing land use and trends of its change provides an opportunity to identify the state of the system of territorial organization of agricultural land use. At the same time, the composition of land by categories, lands, the dynamics of their changes is established. Characteristics of the current land use in terms of the size of the area, the location of lands and borders are given, shortcomings are revealed. The basis for obtaining these data is the land redistribution schemes compiled during the first stage of the land reform (1991-1993), cadastral maps, as well as schemes and land management projects for the pre-reform period.

On the basis of the results of the element analysis, a general conclusion is made about the correctness of the developed direction of land use in relation to their ecological, economic and legal status. Analytical materials are the basis for the development of design solutions, but can be used separately from the scheme to provide land management functions.

The project part. The project part of the land management scheme is to develop proposals for the rationalization of land use on the basis of improving the results of the element analysis of the existing situation. The structural model of the project part is presented in Table 2.

The ecological rationalization of land use is to develop measures to restore and improve the natural properties of the land, to stop the processes of negative natural and anthropogenic impact on the land. Such measures include the development, transformation, improvement, melioration, reclamation, rehabilitation, conservation, establishment of special conservation zones, introduction of specialized crop rotations, determination of the nature of land use, engineering protection, etc.

These measures ensure the stabilization of the natural state of the earth, the restoration and improvement of its productive properties. They do not always have a direct economic effect for the given time, but, while preserving the natural resource, in the future they create the basis for long-term life activity and life support of the population in a certain territory.

Table 2: Structural model of the design (constructive) part of the specialized scheme of land management

Elements of the project part	The main content of the work (solved issues)
1. Ecological rationalization of land use	Transformation of lands in water protection, green-protective zones; conservation of agricultural land; improvement of agricultural land
2. Economic rationalization of land use	Restoration of the balance of work and financial provision; determination of the economic consequences of environmental rationalization; identification of promising industries and sources of financial support for their development; restoration of a scientifically sound farming system; adjustment of cadastral value of land with regard to real estate and on-farm remoteness of land
3. Rationalization of the legal regime of land use	Allocation (adjustment) of lands of specially protected territories; Clarification of restrictions and encumbrances; making changes in the distribution of land by category and form of ownership; preparation of data for the implementation of the law on the circulation of land; formation of economic regulators of land relations
4. Improvement of land use	Development of proposals for the elimination of identified land-use deficiencies and determining their effectiveness
5. Rationalization of agricultural production	Determination of preferred factorial and performance indicators for the production of agricultural organizations

ISSN: 0975-8585

Documentation on the subject of land use: 1. Scheme of land management of agrarian education. 2. Explanatory note with the calculated tables for the elements of the project part and a summary table of the performance indicators.

The preservation of the productive properties of land is particularly important in the context of the transition of agricultural financing to mortgage lending. In this case, the mortgagee must maintain the properties of the land at the level fixed in the contract throughout the term of the mortgage. Environmental optimization, even in the absence of sufficient economic effect, should be environmentally effective. Its establishment breaks up into two stages. The first step in assessing the ecologically optimal use of land is to check design solutions for compliance with the requirements, rules and regulations, and the second - to determine the environmental efficiency.

Ecological efficiency of land management according to S.N. Volkov in general terms "is expressed in improving the state of the environment and expanded reproduction of natural resources, achieved through melioration, reclamation of disturbed lands, protection of soils from erosion, implementation of various environmental measures, etc." [3].

In turn, Dolmatova L.G. notes that the ecological effect of land management (rationalization of land use) is expressed in changing the quantitative characteristics that determine the change in the quality properties of the impact object, and environmental efficiency determines (measures) the effectiveness measure of actions aimed at obtaining an environmental effect [10].

Yu.M. Rogatnev's notions of environmental effect and environmental efficiency have similar interpretations, but in his methodology formalized the definition of indicators that characterize these concepts. So, according to his proposals, the environmental effect (positive result) of the organization of land use will be the necessary change in the amount of matter and energy, i.e. for the implementation of project activities it is required to spend a certain amount of substance (introduction, neutralization) and energy (for the implementation of proposals) [24].

The level (measure) of environmental efficiency is determined by the formulas:

$$T_s = Z_s \div R_s \quad (1)$$

where T_s - period of restoration or establishment of the necessary concentrations of matter or energy;

Z_s - costs of the substance for the implementation of land management activities;

R_s - substance introduced or carried out in the process of implementing land management.

Value T_s shows, for what period it is possible to restore the necessary properties of the landscape (balance of humus, potash, phosphoric and sodium nutrition, acidity, woodiness, moisture, etc.).

The normative level of ecological efficiency is the number of years during which it is possible to restore or improve the properties of the natural landscape. Enough environmental efficiency will be in the case when the term of bringing the existing parameters in line with the project proposals for organizing the use of land will be less than the natural period. Improving the ecological status of land use can positively affect its estimated value, so it is important to know the economic consequences of implementing environmental measures.

Economic optimization of land use is carried out on the basis of the results of environmental optimization and provides for activities in two areas, namely: changing the conditions of functioning of the land or changing the quality of the land. The change in the conditions of functioning is a change in the composition and area of agricultural land by mastering, transforming, conserving low-productive and degraded lands, improving labor, fund and energy supply. The change in the quality of land comes as a result of an increase in their productivity, as well as a reduction in the cost of production. The increase in productivity is due to the implementation of measures for the development, transformation, various types of land

improvement (improvement). Reducing the cost of production is possible due to the improvement of organizational and territorial conditions.

To determine the effectiveness of economic optimization of land use, the indicators of economic efficiency of land management, reflected in the land-use literature of past years - the textbook "Land Use Planning" of different years of publication, individual books, articles and recommendations, are applicable.

In the works of modern scientists-land surveyors fundamental research on this problem belong to S.N. Volkov. He developed the methodological basis for the construction of the system and the system of indicators of economic evaluation of land management projects [3].

Considering the nature, types and principles of economic efficiency evaluation S. N. Volkov eventually leads the main indicator (criterion) of efficiency (E_{ni}) as the ratio of the annual growth of the volume of national income produced by land management activities (ΔD) and the costs that caused this increase (Z_o):

$$E_{ni} = \Delta D \div Z_o \qquad (2)$$

Among the main, it also includes an indicator of economic efficiency (E_c) as a ratio of net product growth (ΔD) the cost for the design and implementation of land management activities that require major investments in time (K_o):

$$E_c = \Delta D \div K_o \qquad (3)$$

S. N. Volkov cites a number of other indicators, which in most cases are coordinated scientific and methodological approaches Y. M. Rogatnev on this problem [24].

Y. M. Rogatnev formulates in General terms the concept of economic efficiency of land management "as the ratio of the cost of production, net income, net profit (i.e. effect) to full cost, the amount of the production costs, given the costs, monetary valuation of production resources" [5]. This definition implies the following indicators: profitability of production, cost recovery, payback period of capital costs, resource profitability and profitability of land management.

In the study, the measures considered for the economically optimal use of land differ in the type of economic effect (Table 3). As can be seen from table 3, land use rationalization measures provide two types of effects:

- additional net income from additional products;
- reduction of annual production costs by improving territorial conditions. In this case, the first and second groups of activities achieved the effect of one type, the third and fourth - both types of effect.

Table 3: Measures to optimize land use and the types of economic effect

Groups of events	Types of economic effect	
	additional net income from additional products	decrease in annual production costs due to improvement of territorial conditions
1. Activities that promote the expansion of production and increase the size of the land as a tool (land development)	+	
2. Measures that improve the properties of the land as tools (improved land)	+	
3. Measures that improve the properties of the earth as a universal means of labor (spatial-operational basis)	+	+

4. Measures that improve the properties of the land as an object of labor (co-farming of agricultural lands, transformation)	+	+

To determine the economic efficiency of the optimal use of land, the indicators proposed above are applicable.

In determining the estimated indicators, it is also possible to use the methodical provisions of Proka N.I to determine the level of productivity of agricultural land, depending on the level of fund and labor availability of agricultural units [22]. This approach allows you to combine the results of changes in the conditions and condition of the land. The final conclusions should be made on the basis of establishing the profitability of the land use planned by the project and the cost recovery for carrying out measures for the economic optimization of land management.

In this case, the proposed parameter is Rogatnev Yu.M. profitability of land management (R_l). It is proposed to determine it by the following formula, in%:

$$R_l = d \div (K \times E + C_{ce}) \times 100\%, \quad (5)$$

where d - net income for the entire regulatory period of land management activities, thousand rubles.;

K - capital costs, thousand rubles;

E - capital ratio (E=0,008-0,10);

C_{ce} - annual costs associated with capital costs, for the entire regulatory period of land management activities, thousand rubles.

Improvement of the land use system, settlement system and engineering equipment of the territory creates a system of territorial organization of land use.

In the investigated steppe zone of the Stavropol Territory a large settlement settlement system and a fairly dense network of improved mainline and intra-farm highways (0.12 km per 100 hectares of agricultural land) were established. Therefore, in the present conditions of the zone improving land use - is to create the territorial basis for the environmental and economic rationalization of land use by specifying the size of individual land use, deficiencies location and boundaries - through strips, interspersions, wedging, far lands, long lands, affectation, uncertainty boundaries.

The most important and predominant land in the steppe zone is arable land, it is also a determining factor in establishing (specifying) the size of land use.

When working on this issue, the following conditions (requirements) must be met:

- the arable land area should be within the limits of the sizes available for servicing by available labor and energy resources;
- the composition and ratio of agricultural land must correspond to the specialization of production that has been established over many years;
- the area of agricultural land should remain stable for at least the rotational rotation period of the crop rotation.

The condition of the proposed stability of the area of agricultural land is derived from the nature of the land laws of recent years, in accordance with which the turnover of land in the boundaries of agricultural organizations is continuously proceeding. In our opinion, this process needs to be regulated by the establishment of certain terms for the redistribution of land (for example: the beginning of the calendar year - January 1, or the end of the financial year - November 1). [9].

The size of the land uses is related to their location and boundaries. Strip alternation, interspersing, wedging should not be allowed, and if they are available, they should be eliminated. For this, there are methods for an equal exchange of land, straightening borders, and so on. As for the remote earth, it is eliminated or not allowed by determining the estimated (normative) for the given conditions of the distance. In this case, the formulas by Yu.M. Rogatnev [5]

$$R_r = R_t x K_1 x K_2 \quad (5)$$

$$R = 0{,}38 \times P \quad (6)$$

$$K_1 = 1{,}0 + 0{,}2 \times (R_x - 3{,}2R_t) \div 3{,}2R_t \quad (7)$$

$$K_2 = 1{,}0 + 0{,}4 \times (R_n - 1{,}6R_t) \div 1{,}6R_t \quad (8)$$

Table of symbols:

R_r-calculated distance, km;

R_t-theoretical distance, km;

P-land use area, land plot, array of production unit, km^2;

K_1-coefficient that takes into account the relative location of the economic centers;

K_2-coefficient, taking into account the location of the economic centers relative to obstacles;

R_x-the shortest distance between the farms, km;

R_n-distance from the economic center to the barrier, km.

Far-earth is not allowed or absent if all the lands are within the calculated (normative) distances from economic centers.

When refining or designing new land-use boundaries, it is important to minimize their perimeter by making them compact, properly configured and avoiding unreasonable fracture.

Effect and efficiency of land use improvement according to A. A. Vityutnev is compliance with the conditions (requirements) of design and giving rational parameters to the size, location of land and boundaries. In the case of alternative options, they are compared in terms of the loss of agricultural production from deficiencies and deviations from the rational parameters of land use [2].

To streamline land use the major agricultural crops affected by land and other businesses may redistribution, including between the land categories. In the pre-reform period, these issues were resolved through equal or equivalent exchange of land, as well as a complete reorganization of the land use group. In the conditions of market economy at improvement of land use redemption-purchase of the land plots, monetary compensation taking into account the standard market price can be required.

The interest of the authorities in improving the land use system should be supported by law. In particular, restrictions on the sale or lease of land are necessary if these actions lead to a deterioration of the location of adjacent land use. Economic incentives from the state, for example in the form of tax incentives for business entities in affected land-use regulation projects, are important. All project activities should be aimed at compliance and improvement of the ecological, economic and legal status of the land.

Improvement of the legal basis of land use provides for the creation of the legal status of land, in which the activities of environmental, economic rationalization, improvement of land use become competent. At the same time, the redistribution of land by categories and forms of ownership is legally formalized. The permitted use of land, restrictions and encumbrances in the use of land are established. An important place should be given to the allocation of land for market turnover in compliance with the requirements of land management Under the "law on the turnover of agricultural land" [19].

RESULTS

As a result of drawing up the scheme of land management, with such its content, a certain fixed system of agricultural land use is established as a basis for solving the problems of development and improving the efficiency of agricultural production in the near future.

1. In the conditions of the district ecological, economic and legal rationalization of land use, improvement of land use are carried out simultaneously with the regulation of agricultural production as the main activity.

2. Agricultural production combines land as a natural resource, people and means of production. Therefore, the types and volumes of project activities to rationalize the use of land should vary depending on the economic situation in agricultural structures.

3. The agricultural organization is well provided with labor resources and basic means of production and with a high level of natural fertility has a low level of land use efficiency. This may be due to either insufficient use of natural potential or high production costs and low sales prices. In such a situation, methods of land management may reduce the costs of production through the development of patches in arable land (landing sodic spots and saucer-like depressions), improving the configurations and working areas, improving the structure of the use of arable land, the establishment and placement of types and kinds of crop rotation.

4. The agricultural structure with a high level of fertility has a high level of efficiency of land use, further development in this case can be aimed at increasing the scale or efficiency of existing production. In turn, scale-up can be achieved through further intensification of land use or expansion of agricultural land. Intensification is associated with investments in irrigation, transformation, improvement, which is not feasible at this stage in the conditions of the steppe zone. There is still expansion of acreage, but not through the development of new land, and more complete use of existing land, preventing ungraded areas and artificial increase in the area of vapor, as is the case in the Stavropol region, despite the high production potential.

5. The agricultural organization is well provided with human resources and basic means of production and at low (low) level of natural fertility has a low level of efficiency of use of the earth. In this case, it is necessary to increase the economic fertility of the land used. Land management methods this is achieved by removing from the arable land of low productivity or degradation (conservation), the introduction of special soils to improve crop rotation.

6. The agricultural organization has a low level of labor and fixed assets with a sufficiently high level of natural fertility. The increase in the labour force is hardly possible. The increase in fixed assets is also difficult to expect, as it involves significant investments. The real way to improve the situation is to reduce the area of arable land to a size that balances with other factors of production. It is appropriate resource method of design, when the basis of agricultural calculations are placed available resources-labor and means of production, and then determined by the composition and area of agricultural land that can be provided with these resources.

DISCUSSION

The scheme of land management of the district is the main pre-project and pre-plan document that determines the most effective directions of use and protection of land resources for the future (at least 12-15 years) in conjunction with the main ways of development of land ownership, land use, agriculture and other sectors of the administrative district. The first stage of the scheme (stage) is, as a rule, pre-project and is developed for a 5-year period. The document is intended to address the following issues:

- justification of the need for land resources for various industries, transport, agriculture and forestry, etc., taking into account the prospects of their development, as well as the needs of the land of citizens (for collective gardening and gardening, cottage and individual housing construction, development of personal subsidiary and peasant farming, etc.);
- identification of land reserves suitable for agricultural and other use, justification of the priority of involvement of new lands in agricultural turnover;
- intersectoral reallocation of land, improvement of land tenure systems and land use in addressing their weaknesses (farming, dannasama, skraplania etc.);
- justification of indicators of intensity of use of land resources and productivity of agricultural land;
- development of prospects of development and placement of economic centers, industrial and social infrastructure;
- justification of measures to protect land from erosion, conservation and improvement of soil fertility, implementation of other environmental measures;
- determination of the need for capital investments, material and labor resources for the implementation of the planned activities and evaluation of their effectiveness.

In technological interrelation with schemes of land management of areas and other pre-project materials develop projects of intereconomic and intraeconomic land management.

Inter-farm land management projects address the issues of formation or regulation of land ownership and land use of agricultural enterprises and citizens, as well as the provision (allocation) of land to industrial, transport and other non-agricultural enterprises, organizations and institutions.

Projects of intra-farm land management are developed in specific agricultural enterprises. Their main goal is the organization of rational use and protection of land, as well as inextricably linked with it means of production. Therefore, the project of on-farm land management affects not only the organization of the territory of the agricultural enterprise, but also the settlement, organization of production, labor and management in it.

Thus, the difference between projects and schemes of land management is the lack of legal nature, not the obligation of implementation, the scheme is not transferred to the area, and is implemented through land management projects based on it.

CONCLUSION

In accordance with the goal of the study of the process of ecological and economic assessment of the land, all the problems were solved and the following results were obtained:

1. The General characteristic of land management was given as a sequence of related cartographic, engineering, inventory work aimed at studying the state of the land, including work on the organization of the territory, the establishment of boundaries of land management on the ground.
2. The definition of the scheme of land management of the area or rural settlement (district) as one of types of land management documentation was given. The main purpose of this document is to identify the most effective, environmentally safe and socially oriented areas of use and protection of land resources, economically feasible development of various forms of management on the earth, the formation of a multi-faceted economy, as well as information and reference support in the region.
3. The theoretical and practical contribution of domestic and foreign scientists to the solution of issues of agricultural land management is considered. It is noted that the management of these lands at the Federal, regional and municipal levels currently needs significant improvement.
4. The analysis of the legal regime of land use which is aimed at the study of forms of ownership, ownership and use of land in the context of individual agricultural structures and land restrictions and encumbrance in use. A clear legal registration of land relations and conditions of land use will contribute to the stabilization for a certain period of agricultural land use and agricultural production.
5. The conditions of use of the earth the sizes of branches and specialization of production, labor, Fund and energy supply are considered and other allowing to estimate its functioning as the most important factor of agrarian production. The negative phenomena and processes that reduce the effectiveness and efficiency of use and value of land, as well as identify factors that increase these indicators are indicated.
6. The ecological rationalization of land use is defined as the development of measures to restore and improve the natural properties of the earth, to stop the processes of negative natural and anthropogenic impact on the earth. Such activities include development, transformation, improvement, reclamation, reclamation, rehabilitation, conservation, establishment of special protective zones, introduction of specialized crop rotations, establishment of the nature of land use, engineering protection.
7. The study presents measures for economically optimal use of land, differ in type of economic effect and provide additional net income from additional products and reduce annual production costs by improving territorial conditions.

Summing up, it should be noted once again that the scheme of land management is the basis for the functioning of land use and effective development of agricultural production. Types and volumes of the projected actions for rationalization of use of lands shall provide balance with factors of production, labor resources and means of production and be eco-economically effective. The rationalization of land use is the gradual improvement of the ecological, economic and legal status of agricultural land use and is closely related to the development of agricultural production.

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