4. The sustainable Development zone is located on an area of 136864 ha. [2]

Key words: Forest reproduction, fumes, buffer zone, brackish soils, recreational use, boron sands, forest suitability of soils.

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G.S.Aitkhozhayeva[1], A.N.Zhildikbaeva[1], T.P.Pentaev [1,2], A.G. Bauhan[1], N.Sh.Zhumagalieva[1], V.Gurskiene[3]*

[1]Kazakh National Agrarian Research University, Almaty, Kazakhstan, g.aitkhozhayeva@mail.ru, a.zhildikbaeva@mail.ru, baukhan94@mail.ru*
[2]Al-Farabi Kazakh National University, Almaty, Kazakhstan, t-p-12@mail.ru
[3]Vytautas Magnus University; Lithuania; Kaunas, virginija.gurskienelt@gmail.com

THE CURRENT STATE OF AGRICULTURAL LAND USE IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

Abstract

This article discusses the rational use of agricultural land, taking into account structural and resource indicators for sustainable development. The effectiveness of land use in farms with different forms of land ownership depends on increasing labor productivity, strengthening the economy regime, increasing the intensification of production, using internal reserves and opportunities for agricultural production and, especially, rational use of land. The basis for the formation of sustainable land use should be strict observance of the established relationships between disturbed and undisturbed territories. Undisturbed territories should be considered as a stabilizing factor neutralizing anthropogenic impacts on the landscape. In this regard, the tasks of preserving productive agricultural land, optimizing arable land and acreage in terms of quantitative and qualitative characteristics of land are becoming a priority. The solution of these tasks is connected with the improvement of technologies for maintaining and increasing the bioproductivity of agricultural lands, the development of technologies for rational land management, land use and land protection, the creation of effective organizational and legal mechanisms for managing agricultural lands, as well as the development of state monitoring of agricultural lands. In order to approach the practice of determining the efficiency of land use, it is necessary to focus in more detail on its factors according to the selected functional subsystems and types of efficiency.

Keywords*: efficiency, agricultural lands, land security, land use, degradation, anthropogenic impact, sustainable land use.*

Introduction

The agrarian focus of the Republic of Kazakhstan requires improving the use of land resources as the main means of production. Land is the basis of human existence, determines its important role in the process of socio-economic development of society. As the basis of the ecosystem, a tool and an object of production, an object of property rights, it is the basis of sustainable development, a condition for social progress and human well-being. The introduction of balanced land use is an extremely necessary problem [1].

In modern conditions, outdated concepts of organization and management of land resources, which are not focused on sustainable land use, continue to operate. In this regard, the strategy of extensive land use (unreasonable fragmentation of land areas, reduction of valuable agricultural land and livestock, increase in the area of arable land, pastures, the prevalence of monoculture, a sharp reduction in the application of organic fertilizers), as well as ignoring scientific recommendations for the efficient use of land, the ongoing policy of combating the consequences of land degradation, and

not its causes; imperfect regulatory framework, the lack of economic mechanisms to stimulate new economic entities on the land. In addition, the absence of an environmental component in the current land use strategy, the absence of a concept for the greening of agriculture and land reclamation, the instability of the state structure and land management system are the reasons for the persistence and deepening of the crisis ecological and economic situation [2].

Sustainable land use is a system of social development relations that achieves an optimal balance between economic growth, normalization of the qualitative state of land resources, and satisfaction of the material and spiritual needs of the population. Justifying the need for sustainable land use, its importance for the purpose of preserving land resources, it is necessary to rely on the basic social, economic and environmental laws and principles [3].

Today, Kazakhstan does not properly ensure the rational use of land resources and the reproduction of the productive potential of agricultural lands. Since the processes of land reform are slow, the land issue has become extremely politicized, and the transfer of land to effective owners is practically blocked. In this regard, the issues of conservation, rational use and expanded reproduction of land resources as the basis for sustainable development of Kazakhstan have become more acute. The solution to these issues is a pressing problem of our time.

Materials and methods

An important methodological part of the study is the scientific findings and provisions of economists and directions concerning the problems of sustainable agricultural land use. Sustainable agricultural land use implies the use of land that preserves the area of agricultural land, does not allow a decrease in its fertility, in accordance with the requirements of the legislation on the targeted use of land, which correspond to the natural, climatic, geographical and ecological properties of specific land plots, and at the same time achieves the maximum economic effect per unit area.

During the study, various methods of economic research were used: economic and statistical - in the analysis and assessment of the current state, abstract-logical, used in identifying industry and regional characteristics. In addition, data from the state land cadastre, data and statistical materials of the Land Resources Management Committee of the Republic of Kazakhstan, as well as the results of analyses and studies conducted by the authors of this article were used.

The study used abstract-logical, statistical-economic, balance, and monographic methods.

Results and discussion

In the production sphere of land use, especially in agriculture, the main goal is economic efficiency, social and environmental types of efficiency have not been taken into account until recently. At present, they are the conditions for limiting the implementation of the main goal of land use in the production sphere and directly affect the process of expanded land reproduction [4].

Particular attention should be focused on the implementation of sustainable land use development through a comprehensive solution to the problems of ensuring rational land use. One of the important components of their solution is the optimization of land use.

Rational land use is accompanied by a number of goals, one of which is the main one and plays a dominant role, the need to implement others limits the achievement of the maximum value of the main goal, and therefore, obtaining its maximum efficiency

When considering the system of indicators for assessing the efficiency of land use, three groups of indicators can be identified: [5]

1. Quantitative and qualitative assessment of the production potential (capacity) of land: availability and composition of agricultural land; distribution of land by land users and landowners; terrain; soil fertility; soil erosion indicators; water, heat, light, air regime of soils.

2. Intensity of land use: labor supply (land supply); capital supply; energy supply; fertilizers; proportion of intensive crops; capital investments; proportion of irrigated, drained lands

3. Efficiency of land use: crop yield; cost price of 1 centner of fodder (grain) units; production of basic products per 100 hectares of agricultural land; profit from the sale of crop products per 1 hectare of agricultural land; profitability of crop products. (Table 1)

Table –1. Land supply of administrative districts and rural districts

Name of region	Region of land of all categories, thousand hectares	Including agricultural land, thousand hectares	Number of administrative-territorial units		Land supply of 1 administrative district and 1 rural district for all land categories, thousand hectares		Land supply of 1 rural district for agricultural lands, thousand hectares
			rural district	village (rural district)	rural district	village (rural district)	village (rural district)
Almaty	22 356,0	8 697,3	16	247	1397,3	90,5	35,2
Turkestan	11 724,9	4 050,3	12	177	977,1	66,2	22,9
Note: Calculations are based on statistical data and land balance as of 2022							

The different levels of land availability and land use efficiency in the regions are most evident in the category of agricultural land within its current boundaries. Thus, the production of gross output per 100 hectares of agricultural land and 100 hectares of arable land in the intensive farming zones of the northern and southern regions significantly exceeds the indicators of the western and central regions.

The analysis showed that the greatest dependence of land use efficiency and economic activity of the subjects is manifested in the zonal aspect and is associated with climate, soil types and subtypes, soil fertility, and the geobotanical composition of vegetation.

In the conditions of the developing land market, the formation of land use is faced with the urgent issue of organizing sustainable competitive land use that ensures a high level of marketability of production and a sufficient level of profitability. The main factors influencing sustainability are: compactness of the territory, a significant proportion of good quality land, proximity of the main crop rotation areas to the production infrastructure, places of sale of products, technological activity, implementation of systematic measures to improve soil fertility, growth of land productivity, purchase of land use into private ownership, absence of degraded lands, desertified territories, compliance with the regulatory load of the existing livestock and hayfields and pastures, financial stability: availability of sufficient own working capital for conducting expanded production, income, borrowed funds in accordance with solvency for settlements of loans with banks, adequacy of provision with labor resources and settlements (Table 2), [6,7].

Table – 2. Factors Affecting Sustainability and Efficiency of Land Use

Main factors	Main events
compactness of the territory	location in a single area, equidistant from farms and estate centers
significant proportion of good quality land	systematic measures to improve soil fertility: the use of organic and mineral fertilizers, proper soil cultivation in accordance with the slope of the terrain, etc.
absence of degraded lands, desertified areas, compliance with the standard load of the existing livestock population and hayfields and pastures	radical improvement of hayfields and pastures around the SNP, a corral system of grazing livestock, planting forest stands (saxaul forests), reclamation measures to reduce salinization of lands, etc.
proximity of the main crop rotation areas to production infrastructure and product sales areas	sufficient availability of labor and material resources: permanent employees and low transportation costs for product delivery
technological activity	implementation of water-resource-saving and agro-landscape technologies
financial stability	availability of sufficient own working capital, income for conducting expanded production, borrowed funds secured by high solvency
high production potential	sufficiency of land, labor and material resources and uniform distribution of rural settlements
institutional component	stable land use with intra-farm land turnover: inheritance, donation of land shares within an enterprise
attitude towards land ownership	private property, long term lease

The territory of Kazakhstan is mainly located in the steppe, semi-desert and desert natural zones.

Extensive development of agricultural production has left a mark in the form of land degradation and impoverishment of landscapes, more than 60% of the country's territory is subject to severe desertification, which leads to a decrease in soil fertility and, as a consequence, to a reduction in the productivity of livestock and crop production.

Agricultural lands occupy 86.8 million hectares, which corresponds to 33.2% of the land fund and have a special legal regime. They are subject to special protection aimed at limiting their seizure and non-targeted use, and their unnecessary transfer to other categories of land that are less valuable for agriculture. In the composition of agricultural lands, farmland occupies 83.2 million hectares or 95.8%, including arable land - 21.9 million hectares or 26.3% of all farmland (Table 3).

Table – 3. Use of agricultural land by land composition for 2022 (thousand hectares)

Name of region	Total agricultural land	including						
		arable land	irrigated from it	million population	depend	irrigated from it	haystack	pastures
Almaty	6924,1	990,3	409,8	20,5	109,9	22,3	222,0	5581,1
Turkestan	4161,4	810,1	377,2	13,9	141,4	16,3	117,7	3278,3
Note - data from the Agency of the Republic of Kazakhstan for Land Resources Management (form 22 and 22-a)								

According to the Land Management Committee for 2022, there are about 5 million hectares of eroded (washed away) soils in the country's regions, of which 1.0 million hectares are arable land. Soils subject to wind erosion occupy 25.5 million hectares, of which 594.6 thousand hectares are arable land [8].

The largest areas of washed-out soils in agricultural lands are in the Turkestan region - 958.7 thousand hectares, including arable land - 235.6 thousand hectares, of which 31.1 thousand hectares are irrigated.

Wind erosion of soils (deflation) is widespread, but its greatest manifestation is observed on lands represented by carbonate soils and soils of light mechanical composition (sandy, sandy loam and light loamy).

The main areas of soils subject to wind erosion in agricultural lands are found in the Almaty region - about 5 million hectares, including 64.8 thousand hectares in arable land, Turkestan 3.1 million hectares, Kyzylorda and Zhambyl regions - about 3 million hectares each.

A significant share of eroded agricultural land in their total area is noted in Almaty (35.3%), Zhambyl (30.6%), Kyzylorda (26.8%) and Turkestan (39.5%) regions.

Of the 30.7 million hectares of eroded agricultural land, 1.7 million hectares are arable land, of which 1.4 million hectares (81.1%) are mainly represented by slightly eroded soils that require simple anti-erosion measures. Moderately eroded soils in arable land account for 303.1 thousand hectares (17.8%), they require intensive anti-deflation and anti-erosion melioration.

In almost all natural zones and regions of Kazakhstan, a tense environmental situation is developing, therefore the problem of rational use of soil resources, reproduction of fertility and their preservation from desertification should become an integral part of national policy, the basis for sustainable economic development of the country. The current situation in the protection and use of land resources requires radical changes in land use.

To ensure sustainable development, it is necessary to form such a right of ownership to land, with the help of which the legality of land use entities is clearly defined, and the powers to own, use and dispose of land are established. Land ownership relations must fully embody the ecological and economic components of land use, social connections and processes. Ensuring such a principle will contribute to the sustainable development of society [9].

The transition to sustainable development involves the formation of a mechanism for efficient land use both at the national and regional levels with a socio-ecological-economic orientation and with mandatory state support.

The essence of the transition of the agricultural sector to the formation of sustainable land use should consist in the awareness of all subjects of land relations, including the state, landowners and land users, as well as citizens, that the cause of the decline in agricultural production was the constant unjustified redistribution of land and the ecological limit of the possibilities of land resources.

One of the principles operating in the mechanism of sustainable land use is obtaining the maximum possible mass of agricultural products from a unit of land area. Compliance with this principle is possible with the presence of the basis of the "green revolution": new varieties of plants and breeds of cattle, scientifically based use of fertilizers and plant protection products and the development of correct farming systems [10].

The methodology of sustainable use of agricultural land is expressed in the following: maintaining the necessary level of biotic regulation of the environment; hierarchy of levels of management of sustainable land use: conceptual, ideological, political and economic.

Scientific and technological principles of sustainable use of agricultural land include: Justification of strategic priorities and indicators of sustainable land use; – comprehensive (ecological and economic) assessment of land resources; – definition of "corridors" of acceptable land use; coordination of individual interests of land users with public preferences; multi-criteria optimization of land use.

A very important link in creating a mechanism for the formation of sustainable land use is the process of increasing (expanding) the category of lands for nature conservation purposes through the formation of new reserves, wildlife sanctuaries, and national parks. Tightening land allocations, reducing agricultural areas in forest-steppe and steppe zones should be considered as preserving key areas with clean water and low morbidity of the population. The condition for the formation of this mechanism is the greening of the land law.

The issue of optimal compliance between the state of land resources and the legal regime of their use significantly affects agricultural lands. The excess of lands in the agricultural sector, their irrational use and low efficiency in the production of agricultural products with huge energy costs are obvious reasons that slow down the process of transition of the agricultural sector to its sustainable development and the formation of efficient land use.

Despite the fact that in recent years the state's activities to regulate and support the agricultural sector of the economy have intensified and a system of forming land-use relations has been implemented, the problem of ensuring the country's food security through the effective use of agricultural land remains unresolved. Conditions for the development of sustainable land use in the agricultural sector of the economy have not yet been created, in particular, the conservation and rational use of land and the prevention of their retirement from agricultural turnover. And the measures taken have insufficient impact on his condition.

The revealed negative trends can be seen throughout the country, and the problem of reducing the most valuable agricultural lands is aggravated by uncontrolled market turnover of agricultural lands and their subsequent transfer to the category of land settlements, alienation for the construction and expansion of industrial enterprises, transport and other purposes, and land degradation as a result of irrational, mismanagement. In the current conditions, new approaches are needed in the agrarian policy of the state, ensuring the organization of effective land use, high-quality accounting and assessment, protection of land from degradation and control over their intended use.

In order to ensure the sustainable use of agricultural land, it is necessary, from our point of view, to implement a number of measures: to improve the system of land relations; to optimize the structure of land use on scientific principles; to ensure the reclamation of degraded lands; to improve the legal regulation of relations in the agricultural sector and stimulate the greening of agricultural machinery; to increase the volume of production of high-quality food products based on an analysis of consumer demand; to ensure state support for small businesses; introduce proper lending and insurance for agricultural producers.

Conclusions

The creation of a mechanism for the formation of sustainable land use in the regional aspect, taking into account its basic principles, can be presented in the form of the following areas:

1. Greening of production processes for agricultural land use.

2. Creation of an optimization structure of the land fund taking into account the prevention of desertification and land degradation processes, the search for a rational relationship between land resources and the mode of their use.

3. Restoration of lost livestock industries that contribute to the organization of rational land use.

4. Organize work to protect lands from further destruction and various types of degradation and pollution.

5. Formation and implementation within the framework of regional territorial entities of programs to improve land fertility, providing for:

- principles of minimizing anthropogenic impact on land resources and the gradual elimination of negative consequences;

- principles of a differentiated approach to the implementation of environmental measures, allowing for the concentration of efforts and resources on increasing soil fertility and the overall efficiency of agricultural land use.

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Г.С.Айтхожаева[1], А.Н.Жилдикбаева[1]*, Т.П.Пентаев[1,2], А.Г. Баухан[1], Н.Ш.Жумагалиева[1], В.Гурскиене[3]

[1]Қазақ ұлттық аграрлық зерттеу университеті, Алматы, Қазақстан,
g.aitkhozhayeva@mail.ru, a.zhildikbaeva@mail.ru, baukhan94@mail.ru*
[2] Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан,
t-p-12@mail.ru
[3]Витаутас Магнус Университеті; Литва; Каунас қ., virginija.gurskienelt@gmail.com

ТҰРАҚТЫ ДАМУ ЖАҒДАЙЫНДА АУЫЛ ШАРУАШЫЛЫҒЫ ЖЕРЛЕРІН ПАЙДАЛАНУДЫҢ ҚАЗІРГІ ЖАҒДАЙЫ

Аңдатпа

Бұл мақалада тұрақты даму үшін құрыл+ымдық және ресурстық көрсеткіштерді ескере отырып, ауыл шаруашылығы жерлерін ұтымды пайдалану қарастырылады. Жерге меншіктің әртүрлі нысандары бар шаруашылықтардағы жерді пайдалану тиімділігі еңбек өнімділігінің артуына, үнемдеу режимін нығайтуға, өндірістің қарқындылығын арттыруға, ішкі резервтер мен ауылшаруашылық өндірісінің мүмкіндіктерін пайдалануға, әсіресе жерді ұтымды

пайдалануға байланысты. Тұрақты жер пайдалануды қалыптастырудың негізі бұзылған және шаруашылық қызметі бұзылмаған аумақтар арасындағы қалыптасқан қатынастарды қатаң сақтау болуға тиіс. Бұзылмаған аумақтар ландшафтқа антропогендік әсерді тұрақтандыратын, бейтараптандыратын фактор ретінде қарастырылуы керек. Осыған байланысты өнімді ауыл шаруашылығы алқаптарын сақтау, егістік жерлер мен егістік алқаптарды жердің сандық және сапалық сипаттамалары тұрғысынан оңтайландыру міндеттері басым болып отыр. Бұл міндеттерді шешу ауыл шаруашылығы мақсатындағы жерлердің биоөнімділігін қолдау және арттыру технологияларын жетілдірумен, жерге ұтымды орналастыру, жерді пайдалану және жерді қорғау технологияларын әзірлеумен, ауыл шаруашылығы мақсатындағы жерлерді басқарудың тиімді ұйымдық-құқықтық тетіктерін құрумен, сондай-ақ ауыл шаруашылығы алқаптарынан мемлекеттік мониторингті дамытумен байланысты. Жер ресурстарын пайдалану тиімділігін анықтау тәжірибесіне жақындау үшін тиімділіктің анықталған функционалдық ішкі жүйелері мен түрлері бойынша оның факторларына толығырақ тоқталу қажет.

Кілт сөздер: тиімділік, ауылшаруашылық жерлері, жерді қамтамасыз ету, жерді пайдалану, деградация, антропогендік әсер, тұрақты жерді пайдалану.

Г.С.Айтхожаева[1], А.Н.Жилдикбаева[1]*, Т.П.Пентаев[1,2], А.Г. Баухан[1], Н.Ш.Жумагалиева[1], В.Гурскиене[3]

[1]Казахский национальный аграрный исследовательский университет, г. Алматы, Казахстан g.aitkhozhayeva@mail.ru, a.zhildikbaeva@mail.ru, baukhan94@mail.ru*

[2]Казахский национальный университет им. аль-Фараби, г. Алматы, Казахстан, t-p12@mail.ru

[3]Университет Витаутаса Великого; г. Кауна, Литва, virginija.gurskienelt@gmail.com

СОВРЕМЕННОЕ СОСТОЯНИЕ ИСПОЛЬЗОВАНИЯ ЗЕМЕЛЬ СЕЛЬХОЗЯЙСТВЕННОГО НАЗНАЧЕНИЯ В КОНТЕКСТЕ УСТОЙЧИВОГО РАЗВИТИЯ

Аннотация

В данной статье рассматривается рациональное использование сельскохозяйственных земель с учетом структурных и ресурсных показателей для устойчивого развития. Эффективность землепользования в хозяйствах с различной формой собственности на землю зависит от повышения производительности труда, укрепления режима экономии, повышения интенсификации производства, использования внутренних резервов и возможностей сельскохозяйственного производства и, особенно, рационального использования земли. Основой формирования устойчивого землепользования должно стать строгое соблюдение сложившихся соотношений между нарушенными и ненарушенными хозяйственной деятельностью территориями. Ненарушенные территории необходимо рассматривать стабилизационным, нейтрализующим антропогенные воздействия на ландшафт фактором. В связи с этим задачи сохранения продуктивных сельскохозяйственных угодий, оптимизации пахотных земель и посевных площадей с точки зрения количественных и качественных характеристик земель становятся приоритетными. Решение этих задач связано с совершенствованием технологий поддержания и повышения биопродуктивности земель сельскохозяйственного назначения, разработкой технологий рационального землеустройства, землепользования и охраны земель, созданием эффективных организационно-правовых механизмов управления землями сельскохозяйственного назначения, а также развитием государственного мониторинга из сельскохозяйственных угодий. Для того, чтобы подойти к практике определения эффективности использования земельных ресурсов, следует более подробно остановиться на ее факторах по выделенным функциональным подсистемам и видам эффективности.

Ключевые слова: эффективность, сельскохозяйственные земли, землеобеспеченность, землепользование, деградация, антропогенное воздействие, устойчивое землепользование.