

A. Zhildikbayeva^{1*}, D. Molzhigitova², S. Turgunaliyev², S. Elemesov¹, N. Ashimkhan¹

¹ Kazakh National Agrarian Research University, Almaty; Kazakhstan, a.zhildikbaeva@mail.ru*, serik.yelemessov@bk.ru, ashimkhan_nazerke@mail.ru

² Al-Farabi Kazakh National University, Almaty, Kazakhstan, dikosh.m@mail.ru, Saken.Turganaliyev@mail.ru

EFFICIENCY OF LAND USE BY PEASANT FARMS IN THE SOUTHERN REGION OF KAZAKHSTAN

Abstract

The article presents the results of the study of land use in the branches of fruit and vegetable growing. The purpose of writing the article is to analyze the current state of agricultural land use and establish the reasons for their inefficient use in the southern region of the country.

There was carried out the analysis of the structure of land use in fruit growing by categories of farms in the context of the regions of South Kazakhstan, and was determined the estimated level of efficiency of fruit and vegetable growing by indicators of gross and marketable products. The method of intensive technology for fruit growing in Yenbekshikazakh district of Almaty region is considered, as well as the advantages of innovative technology, especially drip irrigation system. The structure of sown areas under agricultural crops is also analyzed. On the basis of the analysis the ways of optimal use of land resources, including a greater emphasis on the effective use of agricultural land are proposed.

For the rational use of agricultural land, it is necessary to comply with all requirements, such as agro-technical, technological, structural and organizational. Today, in the cultivation of crops, crop rotations are not observed, organic and mineral fertilizers are not applied, which leads to soil degradation and reduction of their yields. There is secondary salinization of soils in the Southern regions, many lands are exposed to water and wind erosion. In this region, modern methods of control, such as space monitoring, are being introduced to control the use of agricultural land, which will allow timely identification and withdrawal of inefficiently used land from economic entities.

Key words: *land assessment, fruit and vegetable production, farming forms, efficiency, agricultural land, rational use of land, land use.*

Introduction

In recent years, in agricultural formations, including peasant farms, intensive over-dense orchards on trellised and dwarf rootstock are being planted. Economic efficiency of such orchards in relation to wide-row planting schemes increases by 2-3 times. Productivity of land use under perennial plantations in terms of yields of pome and stone fruits varies by regions, indicating a different degree of application of innovative technologies (drip irrigation system) in horticulture.

The legislative base also did not reflect the maximum (minimum) size of land use for small peasant farms, although at present the problem of small land is acute and needs to be solved. This problem is especially urgent for the development of the fruit and vegetable growing industry, accompanied by inefficient land use in small areas of irrigated land.

The solution of this problem is associated with the need for effective use of land, which requires the development of methodological approaches to determining the maximum (minimum) their size in order to establish competitive farms with sufficient income for the development of production, profitability and not allowing their further fragmentation.

The issue of inefficient use of land resources is urgent in the region, and this problem is becoming more and more acute. The situation is exacerbated by the low level of direct taxes on land. Many of those who received the right to lease land for free from the state, keep the land for future use without working on it. According to the Land Code of the Republic of Kazakhstan, land leased from

the state for 49 years by rural entrepreneurs for farming is considered to be irrationally used, if they do not use it for its intended purpose for two consecutive years. In this case, it is subject to compulsory withdrawal. There is an exception to this rule. If this land was not developed due to weather conditions, fire, natural disasters, or martial law, then these conditions are cancelled and the period is set anew [1].

To control the development of land allows space monitoring by remote sensing, so here it is necessary to use international experience [2,3]. Today in the Southern region about 30-40% of undeveloped areas that are empty.

Materials and research methods

The monitoring analysis of the database on peasant farms was carried out according to the indicators of orchard areas, planting density, level of specialization, yield, profitability, which allows to estimate the efficiency of fruit production in the southern regions by calculation.

Methodological approaches to the establishment of criteria for the functioning of small forms of economic management, providing the construction of the necessary technological mode and allowing to achieve the development of competitive production in the fruit and vegetable processing industry with the use of innovative technologies in order to prevent their further fragmentation into smaller ones were applied.

The study of foreign experience and the results of the survey of existing peasant farms of fruit and vegetable specialization allowed to establish the maximum (minimum) size of land use with the appropriate structure of agricultural land and sowing areas in the irrigated agriculture zone of the southern region of the country.

The use of the index method of assessing the functioning of small farms made it possible to determine a relatively high efficiency of land, labor and material and technical resources utilization in them.

Research results

As the analysis showed, in the group of farms with high yields, intensive technology of fruit growing, where surface irrigation is used, low yields - 17-19 t/ha. It was found that in farms with the area of intensive orchards of 50-70 ha and in-depth specialization the level of profitability is 1.2-1.4 times higher than in small farms. Such indicators were obtained in advanced farms of Almaty region: farms "Badenko», "Aidarbayev», "Dihan», "Makhmud» with 50-60 ha of intensive orchards [4].

Specific natural conditions cause the need for a more careful study of land management and land use issues. The reforms carried out in the agrarian sector will not give positive results, if consistent program activities supported by the state are not carried out in land management.

Organization of agricultural production requires accurate data on the state of land fertility, and then on cultivated crops. For this purpose, it is necessary to have a unified system of land registration and evaluation on the national and republic scale.

Previously, information about land was limited to registration of land users and quantitative accounting of land, which provided the need for society to legally formalize the right to perpetual possession and use of land and their accounting of the composition of land, in the context of land users. However, the quality of land was not taken into account.

The solution of problems of effective use of land today requires the organization of accounting and assessment of the specific conditions of agricultural production on a separate cultivated plot. It is known that even within one farm, and even more so within a district, there are lands that differ significantly in natural and economic density, which affects the results of production [5].

The level of land use is usually judged by the actual output of gross output per unit area. However, these data do not disclose the activity of agrarian formations as the results of using the lands depend not only on the quality but also on intensification factors and organization of production. Hence there is a need to determine calculated value of gross output taking into account economic evaluation of land.

High yield of fruit growing in the South of Kazakhstan in many cases is achieved at the expense of additional capital investments, in connection with what for an objective assessment of the results in calculating the effectiveness of land use used cost recovery factor.

In South Kazakhstan the economic efficiency of this or that economic form in socially-oriented market economy is considered in interrelation with general efficiency which is an accounting and estimation of influence of many factors. It is able to determine the contours of the economic niche in the market space, which this form is called to occupy. The efficiency of land use in farms with different land ownership depends on the increase in labor productivity, strengthening of saving regime, growth of intensification of production, use of internal reserves and possibilities of agricultural production and especially rational use of land.

Applied to land use or land tenure in the Southern region, rationality implies the expediency of productive and non-productive use of land through the application of both intensive and extensive factors that ensure a constant increase in soil fertility. But the use of intensive factors should not lead to a decrease in land fertility and their retirement from the means of agricultural production.

It is advisable to distinguish socio-economic (national) and economic (economic) efficiency of land use in any form of land ownership. The concept of socio-economic efficiency of land use is wider in comparison with economic (economic) efficiency, as it includes not only economic, but also social results achieved on the basis of the most rational land use.

Soil and climatic conditions of foothills of Almaty, Zhambyl and Turkestan regions are the main areas of industrial and consumer horticulture in Kazakhstan, where 75% of areas of fruit crops on the total area of 38.4 thousand hectares are concentrated. In recent years, in agricultural formations, including farms, intensive overdense orchards on trellised and dwarf rootstock are being planted. Economic efficiency of such orchards in relation to wide-row planting schemes increases by 2-3 times.

In the structure of perennial plantations of all categories of farms in southern region, the dominant specific weight is taken by seed and pomegranate gardens in farms of 19,8 thousand ha (54,7%) and farms of population - 10,4 thousand ha (28,7%). The largest areas under seed (36.4%) and stone fruits (29.5%) gardens from the republican level are in farms of Almaty region where the objects of our research were selected (Table 1).

Table 1 - Structure of land use in horticulture by categories of farms by regions of the southern region of Kazakhstan, 2020, thousand hectares

Region	Area in all categories of farms, thousand hectares	including					
		agricultural enterprises		farms		households	
		area, thousand hectares	specific weight,%	area, thousand hectares	specific weight,%	area, thousand hectares	specific weight, %
Almaty	14,6	2,2	15,1	8,3	56,8	4,1	28,1
Zhambyl	3,6	0,3	8,3	2,3	63,9	1,0	27,8
Turkestan	18,0	3,5	19,5	9,2	51,1	5,3	29,4
Total for the southern region	36,2	6,0	16,6	19,8	54,7	10,4	28,7
including at fruiting age	30,3	3,2	10,6	16,7	55,1	10,4	34,3

In the southern region the area of perennial plantations in fruit-bearing age is 30.3 thousand hectares, or 83.7% of the total area of perennial plantations. Almost half of the area of orchards in agricultural enterprises and 16% of peasant farms are not in fruit-bearing age.

The productivity of the use of land under perennial plantations in terms of yields of pome and stone fruits varies by regions, indicating a different degree of application of innovative technologies (drip irrigation systems) in horticulture. Thus, in 2020, in all categories of farms in Almaty region, the yield of pome and stone fruits was. In Almaty oblast 60 c/ha, including peasant farms - 65.6 c/ha,

agricultural enterprises - 15.6 c/ha, farms of population - 72.5 c/ha. In Turkestan region in peasant farms the yield was 46.9 c/ha, in Zhambyl region - 67.9 c/ha [6].

At present, the placement of perennial plantations in the south-east of the republic can be divided into three types.

The first type is intensive plantations in agricultural enterprises and large peasant farms with different level of fruit growing specialization. The main purpose of these farms is industrial production of fruits and berries, their storage, industrial processing and formation of export potential. In the future, these enterprises will be the main producers of fruits and berries in the country.

The second type is consumer orchards of predominantly peasant farms, the average size of which is about 18 hectares. The produce produced here is used both to meet the on-farm needs and for partial sales in fresh form. These farms participate in supplying the urban population with fruits and berries.

The third type - amateur gardens of private subsidiary plots, horticultural associations and cooperatives. Gardens are designed for self-sufficiency in fruits and berries in the summer and autumn period with partial sale of the surplus of these products.

The implementation of the State program of development of the agro industrial complex in Kazakhstan for 2017-2022 on the large-scale modernization of agriculture is possible with the rational use of land resources [7].

Fulfillment of this task involves the need to form an effectively functioning market system. Regulation of land relations should be carried out within the framework of this system and they should: stimulate effective use of agricultural lands with preservation of their fertility and development of effective forms of management; equalize starting conditions of all subjects of land use as an important condition for formation of competition between them.

Along with this the regulation of land relations should be based on the fact that land in agriculture is an irreplaceable means of production and has a value and a market price, and the price of land correlates with the amount of income derived from the land plot.

The mechanisms currently used to regulate land relations in the Southern region do not fulfill any of these functions, and as a result the efficiency of land use remains low, a significant portion of agricultural land has been withdrawn from circulation. Most importantly, the economic basis for the operation of the law of value, regulating the development of the economy of the agricultural sector is not created.

In Turkestan region 16.1 thousand ha, 15.8 thousand ha in Almaty region and 4.7 thousand hectares in Zhambyl region are under fruit-bearing gardens. The largest areas of land under gardens are in Yenbekshikazakh and Talgar districts of Almaty region, Saryagash district of Turkestan region. The main areas are planted within the altitudes of 650-900 m above the sea level, 70% of orchards are located on light chestnut soils with an annual amount of precipitation of 400-650 mm. In the section of vegetation cover it is established that the areas of orchards in the belt of meadow herbs make up 35%, shrub vegetation - 10%, cultivated arable land - 55%.

Monitoring research in Almaty region with encompassing 521 farms that cultivate fruit crops on 4.3 thousand hectares, in Zhambyl region - 79 farms (area 887 hectares), in Turkestan region - 140 farms on 1.3 thousand hectares have shown that small land tenure with size of gardens to 10 ha in southern regions occupies the largest specific weight. Thus, in Almaty region 380 peasant farms of fruit growing specialization with the area of orchards up to 10 ha occupy 72,9% of the total number of surveyed farms, in Turkestan region out of 136 farms - 102 (75%), in Zhambyl region out of 82 farms - 58 units (71%) [8].

In Almaty region, 17% of orchards are up to 20 ha, up to 30 ha - 5%, over 40 ha account for only 7%. This indicates that the branch of fruit growing is currently developing in small peasant farms, where mainly manual labor is used, and there is no system of state support. The average area of peasant farms in the oblast is only 8.2 ha [9].

Studies have shown that the yield of fruit crops does not always correlate with the concentration of areas of perennial plantations. So, in Almaty region with planting areas of up to 30 ha and from 51

and above received the lowest yields of 80-110 c/ha, and from 31 to 50 ha - the highest - from 170-190 c/ha.

In the farms of Zhambyl region in small orchards with an area of up to 20 ha achieved the maximum yield of 140 c/ha, with an area of 21 to 50 hectares - about 60 c/ha. At the same time, the average area of orchards per 1 farm in Zhambyl region is 11.2 ha. In Turkestan region the highest level of yields - 185 c/ha was achieved in orchards of 41 to 50 ha, in other groups - up to 30 hectares it reached only 100-130 c/ha. Average area of gardens per one farm was 9.3 ha.

In the southern region the "family» orchards are planted on 50-80 hectares by "AlatauFruitEngineering» LLP, "EuroDuoCalem» cooperative, "FTC Equiry» LLP, "ZeroMax KZ» LLP, "VitaFruit» LLP, "GreenLand» LLP with installation of drip irrigation system, trellises, hail nets with initial cost of 1 ha of garden around 45-55 thousand dollars per 1 ha [10,11].

Average cost of 1 ton of pome and stone fruits - 61 thousand tenge in farms of Zhambyl region, 64,0 thousand tenge - Almaty region and 50,0 thousand tenge - in farms of Turkestan region. In general, profitability of fruit production in southern region is not high (Table 2).

Table 2 - Estimated level of efficiency of the fruit-growing industry by gross and marketable output in 2020.

Region	Gross yield, tons	Sales of products, t	Cost of products sold, million tenge	Cost of goods sold, mln. tenge	Profit, mln. tenge	Profitability level,%
Almaty	87298	71584	6270	4610	1660	36,0
Zhambyl	19693	16739	1329,7	1026,1	303,6	29,5
Turkestan	60104	51087	3563,8	2572,7	991,1	38,5

In the structure of sowing of vegetable crops of all categories of farms of Yenbekshikazakh district dominate tomatoes (34.3%), pepper (20.9%), cucumbers (12.2%) and onions (8.8%). In Talgar rayon - tomatoes (19,8%), cabbage (19,2%), cucumbers (13,7%), carrots (12,7%). In Eskeldinsk district - onions (51,6%), cucumbers (10,3%), tomatoes and carrots (8,5% each), cabbage (6,8%) [12,13].

In Turkestan region Saryagash, Kazygurt, Sairam, Arys, Tyul-Kubas, Tolebi districts with total area of horticultural lands over 16 thousand ha are perspective in strategic plan for fruit growing development.

Distribution of perennial plantations by research objects showed that the largest areas of orchards are located in Yenbekshikazakh and Talgar districts, which occupy 46.2% of the total area of the region. In the structure of categories of farms, the largest areas of orchards are located in peasant farms (Table 3).

Table 3 - Distribution of the area of gardens by categories of farms in the suburban area of Almaty, 2020.

District, region	Area in all categories of farms, thousand hectares	including					
		agricultural enterprises		farms		households	
		area, thousand hectares	specific weight, %	area, thousand hectares	specific weight, %	area, thousand hectares	specific weight, %
Yenbekshikazakh District	3,9	0,7	17,9	2,5	64,2	0,7	17,9
Yeskeldinskiy district	0,8	0,09	11,4	0,4	50,1	0,3	37,5
Talgar district	2,8	0,1	3,6	2,2	78,5	0,5	17,9
Total for 3 districts	7,5	0,9	12,0	5,1	68,0	1,5	20,0
Specific weight in the region, %	51,7	40,9		62,2		36,6	
Almaty region	14,5	2,2	15,2	8,2	56,5	4,1	28,3

Of the total number of peasant farms (2703 units) located in the three studied districts, 1215 farms (45% of the total number) have orchards up to 1 ha, from 1.1 to 10 ha - in 1379 farms (51%). Thus, these districts have the greatest development of shallow land. Despite a higher level of yield in them (10-15%) higher compared to the average yield in farms in other areas of the southern region, the transition to innovative technologies of fruit crops cultivation is required.

The first results of the analysis of the integral expression of suitability rating, availability of orchard lands and available massifs of marketable orchards in the interactive map reveal the strategic directions of fruit growing development in the south of Russia and Kazakhstan [14].

The indices of vegetation state and temperature difference were calculated from remote sensing data. Figure 1 shows examples of calculations performed for the test area of Turkestan region. Landsat-8 scenes from July 16, 30, and August 28, 2020 were used for the calculations.

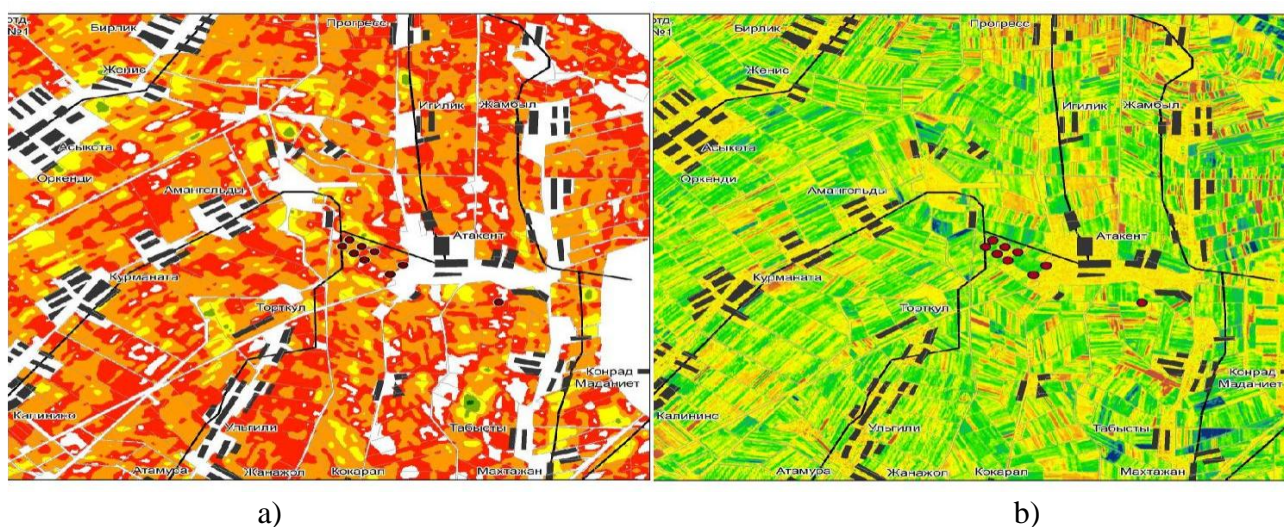


Figure 1 - a) Classification of fields by temperature difference (July 31 - July 16); b) Classification of fields by NDVI index difference for the territory of Maktaaral district of Turkestan region

The experimental fields (land of peasant farms) carry out variety trials, growing vegetables using new advanced technologies, which allowed to increase the yield of vegetable crops by 25-30%, and receive an earlier harvest. Different varieties of tomatoes, peppers, cucumbers, carrots and other vegetables are grown using innovative technologies. Seeds and fertilizers in Agrobusiness center are mainly offered by foreign companies: preparations from Germany and France, fertilizers from Uzbekistan and Russia.

As the results of the survey show, small farms are practically not allocated subsidies, which requires the development of new approaches to the establishment of limit (minimum) size of peasant farms capable of growing vegetables in competitive farms[15].

Conclusions

Assessment of land use efficiency in small peasant farms of fruit and vegetable specialization using index method allowed to single out groups which can sustain sufficient level of competitiveness under condition of application of innovative technologies on irrigated lands and increase of state support measures. In horticulture and vegetable growing on drip irrigation these can be areas of land use with 30 ha and more. Competitiveness index in these groups is close to 1.

As the analysis has shown, in the group of farms with high yields, the intensive technology of fruit growing, where surface irrigation is used, low yields are 17-19 t/ha. It was found that in farms with the area of intensive orchards of 50-70 ha and deep specialization, the level of profitability is 1.2-1.4 times higher than in small farms.

The main criterion for setting the limit (minimum) size of peasant farms of fruit and vegetable specialization is their annual turnover - gross output in monetary terms per 100 ha of arable land (100

ha of arable land), the size of rent income, which determines the level of competitiveness. The main condition for the functioning of these farms is a predominantly family-labor basis of their organization with the number of permanent employees of 4-10 people and involvement of seasonal workers.

References

1. Land Code of the Republic of Kazakhstan dated June 20, 2003 No. 442.
2. Tokareva O.S. Processing and interpretation of Earth remote sensing data: textbook / Tomsk Polytechnic University. - Tomsk: Publishing House of Tomsk Polytechnic University, 2010. - 148 p.
3. Molzhigitova D.K., Zher resourcestaryn baskarudy zhetyldilirudin masseleleri men neigizgi bagytary. izdenister, natizeler. Journal. –Almaty, 2014. –№3. –pp. 313- 316.
4. Consolidated analytical report “On the state and use of lands of the Republic of Kazakhstan. Land Management Committee. – Astana, 2018.– P.275.
5. Data of the Statistical Agency of the Republic of Kazakhstan according to f. 29 CX, 1 CX of the study areas, 2019.
6. Law of the Republic of Kazakhstan "On Peasant and Farming» dated March 24, 2011 No. 420-IV. –[Electronic resource].–2011.–URL: <https://www.adilet.zan.kz>
7. The strategy of development of fruit growing and preservation of biodiversity of ecosystems of wild fruit species in the south and south-east of Kazakhstan // Recommendations of the Kazakh Research Institute of fruit growing and viticulture. – Almaty, 2015. – 45 p.
8. State program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021. [Electronic resource]. –2018.–URL: <https://adilet.zan.kz>
9. Drip irrigation of solanaceous vegetable crops in the south-east of Kazakhstan (tomato, pepper, eggplant). – Almaty: « Kazakh Research Institute of Potato and Vegetable Growing ”. – 2014.–36 p.
10. Moldashev A.B., Sabirova A.I. [et al]. - Methodological recommendations for establishing the maximum (minimum) size of peasant farms of fruit and vegetable specialization in the southern region of Kazakhstan. - Almaty: Kazakh Research Institute AIC economics and development of rural areas, 2017. – 39 p.
11. Karychev, R.K. Increasing the sustainability of fruit growing based on the use of the adaptive potential of variety-rootstock combinations and optimizing the design of commercial apple orchards in Kazakhstan / R.K. Karychev, V.M. Yakushkina, K.S. Sergaziev // Scientific works of SKZ-NIISiV. - Krasnodar, 2015. - T. 8. - S. 19-24.
12. Recommendations for cultivation of high-density intensive apple orchards on clonal rootstocks in the south and south-east of Kazakhstan. – Almaty: Non-commercial JSC "National Agrarian Science and Educational Centre", 2007. –20p.
13. Statistical collection: "Agriculture of the Republic of Kazakhstan» [Electronic resource]. - 2011-2016. -URL: WWW.stat.kz. (date of access: 10.12.2022).
14. Allakhverdiyev A.I., Kamilov M.K., Khababaev T.G., Dogeyev G.D. Effectiveness of land use and land relations in the region // Regional problems of economic transformation. –2016. –№2. – pp. 33-39.
15. Data on farms growing vegetables using intensive technology on drip irrigation under the project "Chilik Farmers» with the participation of the Local Communities Fund (LCF) on support measures, 2019.

**А.Н. Жилдикбаева^{1*}, Д.К. Молжигитова², С.Р. Турганалиев²,
С.К. Елемесов¹, Н.М. Әшімхан¹**

¹ Қазақ ұлттық аграрлық зерттеу университеті, Алматы қ., Қазақстан,
a.zhildikbaeva@mail.ru*, serik.yelemessov@bk.ru, ashimkhan_nazerke@mail.ru

² ал-Фараби атындағы Қазақ ұлттық университеті, Алматы қ., Қазақстан,
dikosh.m@mail.ru, Saken.Turganaliyev@mail.ru

ҚАЗАҚСТАННЫҢ ОҢТҮСТІК ӨңІРІНДЕ ШАРУА ҚОЖАЛЫҚТАРЫНЫҢ ЖЕРЛЕРІН ПАЙДАЛАНУДЫҢ ТИІМДІЛІГІ

Аңдатпа

Мақалада жеміс-жидек және көкөніс шаруашылығы салаларында жерді пайдалануды зерттеу нәтижелері келтірілген. Мақала жазудың мақсаты, ауылшаруашылық жерлерін пайдаланудың қазіргі жағдайын талдау және оларды елдің оңтүстік аймағында тиімсіз пайдалану себептерін анықтау.

Оңтүстік Қазақстан облыстары бөлінісінде шаруашылықтардың санаттары бойынша жеміс шаруашылығында жерді пайдалану құрылымына талдау жүргізілді, жалпы және тауарлық өнім көрсеткіштері бойынша жеміс шаруашылығы мен көкөніс шаруашылығы саласының тиімділігінің есептік деңгейі айқындалды. Алматы облысының Еңбекшіқазақ ауданында жеміс өсірудің қарқынды технологиясының әдісі, сондай-ақ инновациялық технологиялардың, әсіресе тамшылатып суару жүйесінің артықшылықтары қарастырылды. Сондай-ақ, ауыл шаруашылығы дақылдарымен қамтылған егіс алқаптарының құрылымы талданды. Жүргізілген талдау негізінде жер ресурстарын оңтайлы пайдалану жолдары ұсынылды, оның ішінде ауыл шаруашылығы алқаптарын тиімді пайдалануға көбірек көңіл бөлінді.

Ауылшаруашылық жерлерін ұтымды пайдалану үшін агротехникалық, технологиялық, құрылымдық және ұйымдастырушылық сияқты барлық талаптар сақталуы керек. Бүгінгі таңда дақылдарды өсіруде ауыспалы егістер сақталмайды, органикалық және минералды тыңайтқыштар қолданылмайды, бұл топырақтың деградациясына және олардың өнімділігінің төмендеуіне әкеледі. Оңтүстік аймақтарда топырақтың қайталама тұздануы байқалады, көптеген жерлер су, жел эрозиясына ұшырайды. Бұл өңірде ауыл шаруашылығы жерлерінің пайдаланылуын бақылау үшін, мысалы, ғарыштық мониторинг сияқты бақылаудың заманауи әдістері енгізіледі, бұл шаруашылық жүргізуші субъектілерден тиімсіз пайдаланылған жерлерді уақтылы анықтауға және алып қоюға мүмкіндік береді.

Кілт сөздер: жерді бағалау, жеміс-көкөніс шаруашылығы, шаруашылық нысандары, тиімділігі, ауыл шаруашылығы алқаптары, жерді ұтымды пайдалану, жерді пайдалану.

**А.Н. Жилдикбаева^{1*}, Д.К. Молжигитова², С.Р. Турганалиев²,
С.К. Елемесов¹, Н.М. Әшімхан¹**

¹ Казахский национальный аграрный исследовательский университет,
г.Алматы, Казахстан, a.zhildikbaeva@mail.ru*, serik.yelemessov@bk.ru,
ashimkhan_nazerke@mail.ru

² Казахский национальный университет им. аль-Фараби, г.Алматы, Казахстан,
dikosh.m@mail.ru, Saken.Turganaliyev@mail.ru

ЭФФЕКТИВНОСТЬ ИСПОЛЬЗОВАНИЯ ЗЕМЕЛЬ КРЕСТЬЯНСКИХ ХОЗЯЙСТВ В ЮЖНОМ РЕГИОНЕ КАЗАХСТАНА

Аннотация

В статье приведены результаты исследования использования земель в отраслях плодоводства и овощеводства. Цель написания статьи, проанализировать современное состояние использование сельскохозяйственных земель и установить причины их

неэффективного использования в южном регионе страны.

Был проведен анализ структуры использования земель в плодоводстве по категориям хозяйств в разрезе областей Южного Казахстана, определен расчетный уровень эффективности отрасли плодоводства и овощеводства по показателям валовой и товарной продукции. Рассмотрен метод интенсивной технологии по выращиванию плодов в Енбекшиказахском районе Алматинской области, а также преимущества инновационной технологий, в особенности системы капельного орошения. Проанализирована также структура посевных площадей занятые под сельскохозяйственными культурами. На основе проведенного анализа предложены пути оптимального использования земельных ресурсов, в том числе больше акцент сделано на эффективное использование сельскохозяйственных угодий.

Для рационального использования земель сельскохозяйственного назначения необходимо соблюдать все требования, такие как агротехнические, технологические, структурные и организационные. Сегодня в выращивании сельскохозяйственных культур не соблюдаются севообороты, не вносятся органические и минеральные удобрения, что приводит к деградации почв и снижению их урожайности. В Южных регионах идет вторичное засоление почв, многие земли подвержены водной, ветровой эрозии. В этом регионе для контроля за использованием сельскохозяйственных земель вводят современные методы контроля, такие, например, как космический мониторинг, что позволит своевременно выявить и изъять у хозяйствующих субъектов неэффективно используемые земли.

Ключевые слова: оценка земель, плодо-овощеводство, формы хозяйствования, эффективность, сельскохозяйственные угодья, рациональное использование земель, землепользования.

FTAMP 70.85.29

DOI <https://doi.org/10.37884/1-2023/14>

Д.С. Тунгатар, Е.Т. Кайпбаев, Е.Ф. Муханбет, С.Т. Исак, Д.Д. Тұрсыналы*

*«Қазақ ұлттық аграрлық зерттеу университеті» КЕАҚ, Алматы, Қазақстан
tungatar_dana@mail.ru, yerbolat.kaipbayev@kaznaru.edu.kz*,
yerlan.mukhanbet@kaznaru.edu.kz, symbat.isax@bk.ru, didar.tursynaly@kaznaru.edu.kz*

ӨЗЕНДЕРДІҢ МОРФОМЕТРИЯЛЫҚ СИПАТТАМАЛАРЫН ГАЖ- ТЕХНОЛОГИЯЛАРЫН ПАЙДАЛАНЫП АНЫҚТАУ

Аңдатпа

Географиялық ақпараттық жүйелер гидрологияда су ресурстарын есептеу және бағалау үшін, су объектілерінің гидрологиялық режимін зерттеу мақсатында кеңірек қолданылуда. Деректерді жинау, өңдеу және интерпретациялау, гидрологиялық желілерді жобалау және географиялық ақпараттық жүйелері (ГАЖ) технологиясы мен дербес компьютерлерді кеңінен қолдану арқылы шешім қабылдау ұсыныстарын дайындаудың көптеген мәселелерін гидрологиялық тәжірибеде осы уақытқа дейін шешілгеннен жедел және тиімдірек шешуге болады. ГАЖ технологиясының су объектілерін гидрографиялық сипаттамаларымен, гидрологиялық бекеттерімен және өлшеу деректерімен бірге цифрлық немесе қағаз карталарда жедел ұсыну мүмкіндігі болып жатқан процестердің егжей-тегжейлі бейнесін алу үшін бақылау материалдарын автоматтандырылған кешенді талдау мен түсіндіруді жүргізуге мүмкіндік береді.

Бұл жұмыста Алматы облысының өзен бассейндерінде әртүрлі гидрологиялық мәселелерді шешу үшін ГАЖ-ды қолданудың әдістемелік тәсілдері ұсынылған. Сандық карталар таңдалған өзендердің қажетті физикалық-географиялық сипаттамаларын анықтады,