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Natural Geographical Description, Land and Water Fund of Bukhara Region, its Usage Problems

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Abstract

One of the main factors determining the nature of land resources is the soil layer. The paper determines the properties of the soils, the condition and quality of land resources in the region, soil structure, and on the basis of analysis the development of certain agricultural crops is determined. From the point of view of production, the diversity of soil composition of irrigated lands is the staple in the placement of different branches of agriculture, crops in them.

Keywords *- land resources, nature, agriculture, soil, salinization, irrigation, water, climate, temperature, delta, desert.*

I. INTRODUCTION

Bukhara region is located in the south-west of the republic in the Kizilkum desert and Bukhara oasis. The land of Bukhara region is one of the oldest cultural centers in Central Asia. Archaeological evidence suggests that the Bukhara settlers, who lived in the primitive period, first inhabited the lower reaches of the Zarafshan River: along the Daryosay, Mohandarya, Gujayli and Kattatuzkon lakes. These places were very picturesque and irrelevant. Along the water, thick groves grew in the meadows, and game animals were abundant. The primitive population was engaged in hunting and fishing.

Soils in Uzbekistan are divided into two zones according to their distribution - plain and foothill and mountain zone soils. There are more than 15 types of soil in the country, not all of which can be used for irrigated agriculture.

Types of soils widely used in irrigated agriculture include meadow, fallow, meadow-swamp, hungry, typical and dark gray soils.

We include meadow-grass, meadow, meadow-swamp and gray soils in the economically valuable, high-yielding types. These soils form the basis of irrigated agriculture in the republic.

Topography is one of the main influencing factors in the use of land resources. Indeed, the plowing of agricultural lands, their suitability for irrigation, the use of plowing and tillage techniques, the application of reclamation measures - are directly related to the relief features of the land. Therefore, the relief in all respects affects the productivity of irrigated lands.

Relief affects lands in mountainous and lowland areas differently. When soils in mountainous areas are highly susceptible to water and wind erosion, in flat plains the groundwater causes proximity of waters, salinization of soils, secondary salinization.

It is of paramount importance to study the relief aspects in the organization and specialization of agricultural lands. The leading features are the slope and length of the slope. It is advisable to place irrigated crops on surfaces with a slope of 5 degrees and less, it is recommended to use areas with a moderate slope for spring grain growing and horticulture.

II. LITERATURE REVIEW

The influence of relief on the formation of territorial features of agricultural lands of Bukhara region is great. Due to the fact that the region is located in the lower reaches of the Zarafshan River, the movement of groundwater along the surface of the entire basin, along with surface water, is directed

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to the Bukhara and Karakul oases. This, in turn, contributes to the acceleration of salinization of irrigated lands in the region.

Climate resources are one of the factors that determine the efficiency of the land and affect its fertility. Climate indicators, in turn, underline the condition of the land, the characteristics of agricultural crops and are a key factor in the formation of specialization of agricultural sectors. Bukhara region is located on the border of temperate and subtropical climates. Therefore, it is possible to observe the climatic characteristics of both regions in this region. The territory of the Republic is located on a plain, which is dominated by desert and semi-desert zones.

III. ANALYSIS.

The climatic indicators of the plains of Uzbekistan, including Bukhara region, have their own territorial characteristics (Table 1). The high temperature and evaporation, the low humidity, the magnitude of the sum of the positive temperatures indicate that the area is located in the arid zone. This requires the effective development of artificial irrigation practices in agriculture. Having an arid climate requires additional economic resources in agriculture, which in turn affects the cost of production and land use efficiency.

Table 1. Agro climatic indicators of the plains of Uzbekistan

№	Indicators	Zones		
		Northwestern	Central	Southeastern
1	The beginning of days with temperatures above +10 oC	05-11.04	27-31.03	8-14.03
2	End of days with temperatures above +10 oC	18-24.10	22-25.10	12-22.10
3	Periodicity of vegetation days at temperatures above +5 oC	194-204	207-215	242-258
4	The average date of the last spring cold snap	03-12.04	27.03-05.04	03-04.03
5	The average date of the first autumn cold snap	17-23.10	16.10-04.11	06.11-01.12
6	Average annual temperature, oC	14,2	15,0	16,1
7	Average annual rainfall, mm	107	120	132
8	Average annual evaporation rate, mm	1654	1800	2190
9	The sum of positive temperatures above + 10oC	4916	5100	5450

The productivity of irrigated lands is also significantly affected by living organisms - plants, animals and microorganisms in the soil. Under the influence of these factors, the physical processes in the soil are directly, the chemical processes are indirectly changed, its productivity increases. As a result, land has a significant impact on reducing economic costs. Studies have shown that in soils where many earthworms do not have such microorganisms, the yield of perennial grasses was 15 ts / ha instead of 6 ts / ha, i.e. 2.5 times higher. However, in the soils of Bukhara region, living organisms are poorer than in other regions, due to soil properties.

Water is a key determinant of land use efficiency, especially irrigated land. The availability of water resources and their sustainability is an important guarantee for the development of irrigated agriculture. For this reason, water is the main means of production along with land in the agricultural sector.

We believe that the rational use of water is a key criterion for the efficient use of irrigated land. Bukhara region is characterized by a shortage of irrigation water and surface water sources. Only the

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lower part of the Zarafshan River is located in the region, which also does not currently have a water supply. The main water source of Bukhara region is the Amu-Bukhara canal.

Although the region consists of mostly plains, it has its own complex geological structure. Although the relief of the region seems simpler at first glance, its history of development, the degree of fragmentation of its appearance has its own regional characteristics. The formation of relief is related to internal and external forces as well as human activity. The highest point in the region is the Kuljuktog ridge, with an absolute height of 785 meters. The general slope in the relief is towards the Amudarya River, excluding the Ogitma Basin (133 m). The topography of the region can be divided into the following groups according to geomorphological features.

1) Low mountains, plateaus and sloping surfaces surrounding them in a ring. These include plateaus such as Kuljuqtog, Kokchatogh, Tuzkoytogh, Jarqaq, Saritosh, which rise between the plains, and are the highest steps in the relief.
2) Plateaus and ridges with flat surfaces. Korakul, Dengizkul, Uchbosh, Karakir are among them. This group also includes eroded low mountains such as Somontepa, Choshtepa, located at the foot of Dengizkul.
3) Accumulative plains covered by river and lake deposits and eroded by wind activity. These occupy the main area of the province's territory and form flat wavy plains. Among them, sandy areas stand out.

Soils. It is known that soil is one of the most important components of nature, a product that embodies animate and inanimate natural beings. Although desert-specific soils are distributed throughout the region, they do not form a single cohesive area. Soils types vary according to factors such as the nature of the parent rock, topography, chemical composition and depth of groundwater. According to the level of assimilation, soils have 2 large groups (desert and oasis). Among the desert-dry soils, brown sandy-desert, bald-soiled soils and saline soils are common.

Located in the lower reaches of the Zarafshan, the Bukhara and Karakul deltas also include part of the ancient pluvial-alluvial plains and the tertiary Kizilkum plateau, which are partially adjacent to them.

In the Bukhara delta there is a terrace on the river bank and on two banks. The first of them is located on both banks of the river at a width of several meters to 2 km. It consists of a layer of light sand, gravel, and sand. A small part of the soil is covered with layered gravel. Groundwater is located at a depth of 0.5-2 m. The rest of the Bukhara delta is located on the second slope of Zarafshan. In the upper part of the rest of the Bukhara delta, the gravel is located at a depth of 2-5 m. The salinity of groundwater is 1.5-3 g / l, the middle part of the delta consists of layered alluvial effluents, which are 5-10 meters. Covered with gravel. Sizot waters are located at a depth of 1-3 m, their salinity is 5-10 g / l. In the areas of most of the delta, alluvial deposits are covered with agro irrigation deposits with a thickness of 0.5-1.0 meters and more. According to the conditions of groundwater flow in the Bukhara delta, it belongs to the group of groundwater that flows less than a certain area, which leads to an increase in groundwater and an increase in salinity. This process is due to the deterioration of groundwater flow from the top of the delta to the outskirts. The biological and geomorphological structure of the Karakul sub areal delta of Zarafshan to some extent repeats the Bukhara delta. It also consists of two terraces, but while the first is weakly represented and is mainly conditionally separated, the second terrace occupies the main part of this delta. It consists of thick sand alluvial deposits, which are alternated with sand-clay deposits in the margins. In most parts of the delta, alluvial deposits are covered with agro irrigation deposits. Depth of groundwater is in the range of 1-3m. Here the salinity of groundwater increases from 2-5 to 3-7g / l from the top to the bottom.

The ancient delta of Zarafshan flows the Kizilum and covers the last Bukhara delta in the north and northwest. It is composed of alluvial deposits subjected to strong wind erosion processes. At an alluvial weak thickness (0.5–3) covering the base rock. The base rock is exposed in some cases. Part of the ancient delta bordering the Bukhara oasis was developed in irrigated agriculture. Sizot waters are located here at different depths (from 1 m to 5 m). Their salinity varies from 2 to 5 g / l or more. In the north-east, the irrigated zone flows into the plain, which is composed of fine-grained sandstone

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and sandstone deposits with fine-grained joints, while in the south-west it passes into the tertiary and ancient alluvial plains. Sizot waters are located here on a 3-meter surface.

The soils of Bukhara region belong to the subtropical hot zone of the soil-climatic province of Central Asia. Across the region are irrigated atrophic, transitional and desert hydromorphic soils, which are composed of genesis and age deposits.

Irrigated sur-brown soils are found in the periphery of the irrigated zone. They are composed of alluvial layers of diluvia deposits of broad-wave foothill plains with groundwater depths greater than 5 m. They are also found in the foothills of the ancient alluvial plain, where skeletal particles are composed of soil and edged gravel. In some soils, where gravels are located in the space of small bodies, gypsum is observed in their lower layers.

Irrigated arable brown soils vary in mechanical composition: from sandy to medium-mountainous soils, in ancient irrigated soils the upper part of the section consists of an agro irrigation layer with a uniform flow composition of up to 1.5 m in some cases. In newly irrigated soils it increases to 1.8% of its content. Nitrogen content in soils varies from 0.05% to 6.1%, total phosphorus content from 0.09%, and potassium - from 1.4 to 2.0%. The carbonate content of soils is not high. The amount of carbonates in the soil section varies from 3 to 6 percent. Their distribution across the soil section depends on the mechanical composition of the genetic dimensions. These soils are not naturally saline from the top, but the bottom layers are whitewashed.

The tillage layer of light-brown soils differs according to the non-saline system of soils with varying degrees of salinity (0.3-0.9%) (5 to 12mg equivalent in 100 g of soil). (proportionally to the sum and 5-8%) which adversely affects the water-physical properties of soils.

Perennial vegetative irrigation and saline leaching will lead to groundwater runoff at a depth of 2-3 m. Therefore, irrigated sur brown soils evolve over time into sur brown meadows, then meadow soils. At this time the mechanical composition remains the same, the amount of humus in the driving layer increases slightly.

Sur-brown-meadow soils take the stage of transition from desert sur-brown soils to a zonal meadow soils. These soils are close to irrigated brown soils in their upper part according to their morphological structure, are darker in the lower part, and the process of sludge in the form of rust begins to occur. According to their mechanical composition, as in brown soils, the amount of humus in the topsoil varies from 0.33 to 0.16%, and the amount of salts in the topsoil varies from 0.3 to 1.8% in the first meter depth. It varies from 8 to 1.0 percent, carbonates are mainly 7-8 percent (in terms of CO2), gypsum - up to 0.2 percent in SO4).

Sandy-desert soils are composed of soils that are firmly bound to the sedimentary plant, which forms a grassy layer. Humus color is observed at a thickness of 25-30cm. The amount of all humus in this layer is about 0.5 percent, nitrogen in this layer is 0.04-0.05 percent, total phosphorus is 0.14-0.15 percent: groundwater is located at a depth of 2-2.5m.

When sandy desert soils are involved in irrigated agriculture, the grass is degraded and the genetic properties of these soils are lost. In fact, through the sands with a very small amount of material is assimilated. Complex special measures are required to prevent spreading and increase the productivity of these soils: these include tillage, planting of siderite crops, application of soil fertilizers and others.

Sandy desert soils are saline or weakly saline. In irrigated soils, salinity is weak and increases to a moderate level. Long-term irrigation causes groundwater levels to rise to 2-03m, leading to changes in the hydrological regime of sandy desert soils and their transition to desert meadow soils. (transformation).

Irrigated shallow soils are widespread in the ancient alluvial plains. They are formed in conditions where the groundwater level is deeper than 5 m. According to the morphology of these soils, the effect of agricultural culture on them is short-lived, differing only in the cavity of the tillage layer, this layer is medium and light sandy, according to the mechanical composition.

The amount of humus in the driving layer, under which there are layered deposits with relatively light mechanical content, varies in the range of 8-13% (Co2), depending on the mechanical content of the

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cut 0.6-0.8% nitrogen 0.05-0.05% carbonates. Gypsum in soils is less than 0.14-2.29% (So4). These soils are mostly moderately saline. Salinity type-sulfate and chloride sulfate.

Prolonged irrigation of bare soils leads to an increase in groundwater level to 2-3m. Depending on the lithological-geomorphological conditions, this condition increases microbiological activity and organic matter processing during periods of change. The grazing process begins. The soils are converted to a transitional group, first to a barren meadow and then, in a short period of time, to a pasture.

Irrigated grassy and barren soils. Occurs only in the upper part of the Bukhara delta of the region. They are composed of grassy soils in conditions where the upper elements of the relief are less affected by groundwater and the depth is 3-5m. Under conditions of large amounts of water, groundwater can temporarily rise to 1-2 m.

The grasslands of the Bukhara oasis have long been irrigated and consist of a 1-2 m thick agro irrigation layer, which is mainly suitable for good natural movement of medium and light sandy groundwater, and the grasslands of the upper part of the oasis are relatively less saline. They are weakly salted and washed with salt. The tillage layer of these soils with saline type sulfate and rarely chloride sulfate contains 0.5-1.1% humus and 0.04-0.12% nitrogen. The amount of gypsum in the soils is low (0.08-0.42% So4) and the content of carbonates varies from 1.4 to 9.2%.

Irrigated grassy alluvial soils are the most common in the delta of the sub areal zone of Zarafshan. They are composed of groundwater at a depth of 1-2 m, i.e. under conditions of intensive ground-capillary wetting. Grasslands should be developed and involved in production in conditions of gradual change from automorphic conditions to hydromorphic (meadow) conditions, a network of well-functioning collector-ditches should be carried out.

Depending on the level of salinity, meadow alluvial soils vary from weakly saline and saline washed to strongly saline, which depends on the reclamation conditions, as well as the fact that the lands are provided with a collector-drainage system. These soils are characterized by a variety of mechanical composition. Soils close to irrigation sources have a slightly lighter mechanical composition than soils far from them.

In ancient times, irrigated soils were covered with 1.2-2m thick agro irrigation deposits from above. According to their mechanical composition, they are mainly medium and heavy sandy, rarely light sandy and sandy.

Irrigated grassland soils are slightly richer in humus content (1.1-1.45%) and nitrogen (0.08-0.12%) compared to other soils in the desert zone. The deep penetration of humus into the agro irrigation effluent sludge ensures that its reserves in the soil section are high in the soil section.

The amount of humus in irrigated meadow soils is low (0.5-0.7% 0 because in their past - the amount of organic matter in the brown or shale soils was low.

In these soils, gypsum is present in small amounts (0 / 12-0.25%), and it cannot interfere with the development process of salinization. Therefore, in the lower part of the root scattering layer, in some cases, the absorption capacity is formed due to the ingress of sodium and magnesium ions. Salinization leads to a decrease in soil permeability, soil compaction after irrigation, and other negative indicators. Flat -8.8-9.3% CO_2 across carbonate soil section. In general, irrigated grasslands have a relatively high production capacity and are a valuable part of the land fund of Bukhara region. The district of Zarafshan and the ancient deltas are therefore irrigated by meadow soils irrigated from the areas of the terraces of the Kayir and Primary Kirghiz terraces, most of which are located in small swamps of swamp-meadow soils.

These soils are composed of swamps with groundwater levels of 0.5-1 m, under conditions of strong salinization. Therefore, these soils are not only swampy, but also saline. They are mostly weak and moderately saline.

According to the mechanical composition, the soils are heavy and medium sandy. The amount of humus in the arable layer of swamp-meadow soils is around 3%, the total phosphorus reserves, as well as in terms of potassium, these soils are poor.

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Plants. The region is dominated by desert plant species. The total number of species is about a thousand. (4148 species are registered in Uzbekistan) and 580 species belonging to 55 families are found in the desert zone of the region. (Granitov 1964). It should be noted that there are many endemic species among them. Local scientist A.L. Fayziev (1964) notes 173 species of native (endemic) plants typical of Central Asia in the region.

Of these, 13 are found only in this country. In addition, there are 219 species of weeds in the Bukhara oasis alone (Guzairov, 1968).

Cultural species in the oases include their "companions" weeds, as well as fruit-bearing trees. In addition, mulberries planted in the year of silkworm breeding occupy large areas. It should be noted that cotton, melon, watermelon and additional tree species suitable for the hot, dry dusty weather of Bukhara in the single khanate are on the verge of extinction.

Animals. This gift of nature is noteworthy in the region with its diversity and uniqueness. If in the territory of Uzbekistan and adjacent lands there are more than 60 species of fish, 3 species of aquatic and terrestrial, 9 species of mammals, more than 410 species of birds, for many of them the Bukhara landscape is home. It should be noted that there are many species bordering Central Asia. These include the great Siberian sandpiper, the small belly fox, the Afghan-Indian bird, from Old Asia, and the North African gazelle, the barchan cat.

The nature and natural resources of the region have a long history of human exploitation. As mentioned above, the primitive "Bukhara people" settled in the lower reaches of the Zarafshan River (along the Mohandarya, Gujayli, Daryasay rivers) 6-7 thousand years ago and were engaged in hunting and fishing. They lived in dependence on natural conditions. Their transition to agricultural production began 3-3.5 thousand years ago. Now they are engaged in farming, sedentary livestock and handicrafts. It should be noted that instead of the original Bukhara and Korakul oases, 60,000 hectares of irrigated land were irrigated in the adjacent areas - Makhandarya valley, the foothills of Kashkadarya to Zarafshan, Echkiliksay, Varakhsha oasis (lower part of Vobkentdarya), at the same time, the use of desert pastures in various livestock activities is expanding. In later historical periods, the use of the nature of the region has repeatedly faced developments and crises.

According to historical sources, in the early 19th century there were thick saxophone forests around the Bukhara oasis. They were used by the population as fuel, especially in the preparation of coal and alkali (potash). In the markets of Bukhara alone, 40,000 bags of saxophone coal are sold annually. Scientists such as V.A.Obruchev, I.I.Granitov have acknowledged that the main reason for the appearance of mobile sands is not livestock, but hoe.

The discovery of gas and oil fields in the region since 1963 marked the beginning of a new era in the use of the region's natural resources. Due to the sharpness of the geological prospecting, there was no place left that was not affected by human activities. While the development of the gas and oil industry in recent years has served as a positive factor for the socio-economic development of the region and neighboring countries, it has led to the destruction of millions of hectares of pastures in the desert zone under gas and oil wells. The increase in the negative impact of desert squirrels has led to the extinction of rare and useful animals. The technology of gas extraction and use is not up to standard, which leads to the pollution of the region's atmosphere with exhaust gases.

Currently, the territory of Bukhara region can be divided into 2 parts according to the level of development.

1. Desert zone. It covers about 90% of the area of the province. Most of the sandy loam, sandy loam and sandy deserts are scattered here and are mainly used as pastures. Karakul and camel breeding are the leaders. It is also partially used in beekeeping. Hundreds of wells and water pipelines have been built to supply livestock with water. Gas and oil extraction and prospecting are currently underway at the site.

In the desert zone, the main parts of the Amu-Bukhara canal, abandoned lakes such as Ogitma, Karakir, Big-Tuzkon, and main ditches occupy large areas. These have become habitats for waterfowl and create opportunities for fisheries development. In addition, a number of minerals such as gypsum,

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limestone, sand and gravel, natural dyes, graphite are mined in the desert. Shurkul (Alat district), Khojkab saline muds are used in folk medicine.

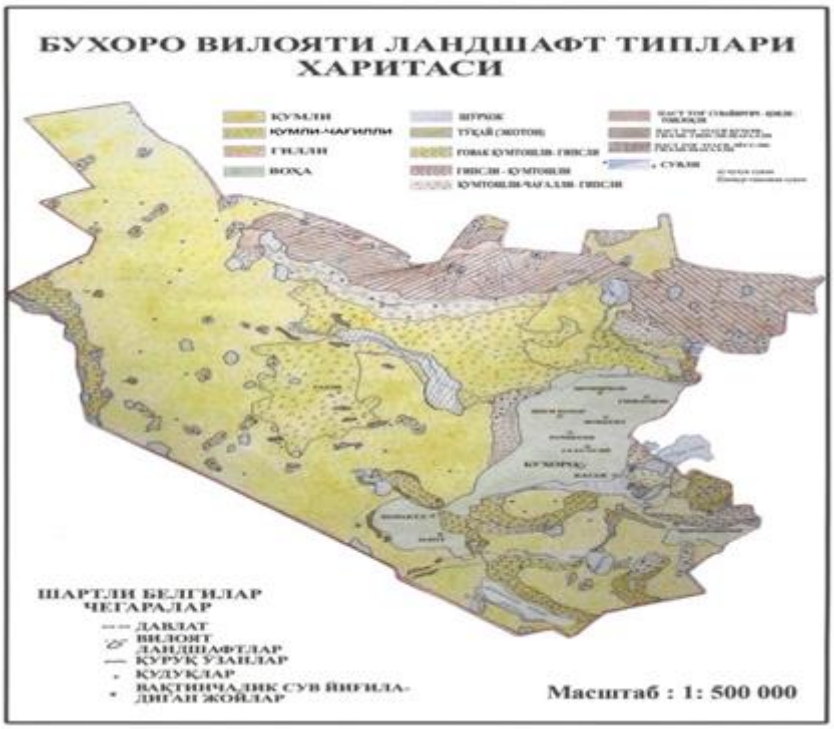
Further enrichment of desert pastures, strengthening of bare mobile sandy areas with food plants, establishment and rational use of protective forests, work against soil erosion and salinization, protection of plant and animal resources are the most urgent tasks today.

2. Irrigated zone - oasis. These are Bukhara, Karakul and the newly built Korovulbazar oases, which occupy about 10% of the region, but the main part of the population is located in these areas. Oases naturally belong to the desert zone and are prosperous lands created by human creative labor. These lands are the socio-economic and cultural heart of the region. Sectors such as cotton growing, horticulture, fruit growing, grain growing, animal husbandry and related agro-industrial complexes are concentrated here. In addition, there are large cultural, scientific centers, settlements, world-famous architectural monuments. Rational use of water in the irrigation zone is the most important task of providing the population with quality drinking water (Damkhoja-Bukhara water pipeline has been launched), protection of lands from salinization, chemical pollution, beautification and landscaping of cities and villages taking into account local natural conditions. In particular, today it is necessary to organize new methods of management associated with a market economy on the basis of strict environmental requirements.

Map of landscape types of Bukhara region

(Nazarov IK, Toshov H.R. 2008)

Bukhara region land fund.



The role of land resources in the sustainable development of the economy of the regions of Uzbekistan, one of its leading sectors, agriculture is invaluable. Because, with their direct and indirect help, almost 1/3 of the country's GDP, the main part of the products consumed by our people are produced. Therefore, its fuller use in the future is a pressing issue. In order to solve this problem, the Government of the Republic is taking measures of social, economic, political, legal and organizational significance. In particular, laws, codes, decrees on land, water and property have been adopted. The documents specify the system of relations on land ownership in the country, their purposeful and efficient use and the procedure for their implementation. Article 55 of the Constitution of the Republic of Uzbekistan states that the legal basis for the ownership of land resources is "Land ... is a national wealth, it is necessary to use them wisely and they are under state protection."

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IV. DISCUSSION

Land is the main resource of agricultural production. Land should be considered as a natural element, as well as a means of production, as the leading basis of agricultural production. The earth exists as a product of nature, independent of human desire and influence. It existed even before the emergence of man, including the emergence of production. Land is one of the primary immutable factors of the natural environment.

From an economic point of view, land has traditionally been seen as a collection of objects of labor delivered by nature, without human assistance. Therefore, in practice, the use of any element of the natural environment at all times has a direct or indirect impact on soil quality and soil fertility.

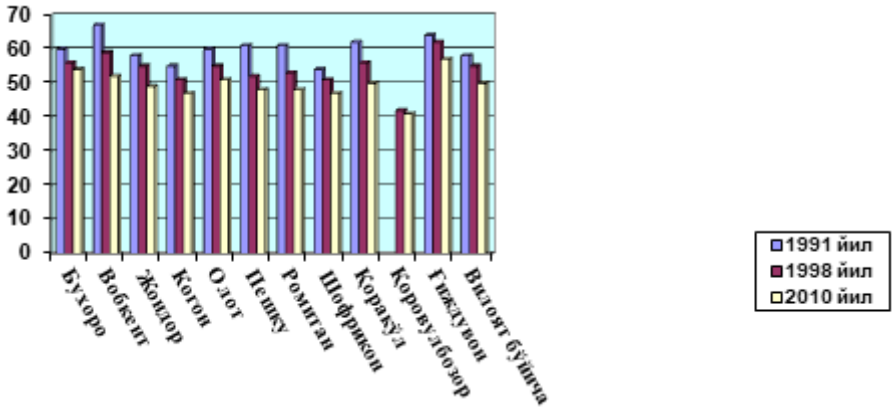
The inclusion of land resources in the list of limited natural resources is due to two reasons: on the one hand - latitude, area, surface, land, water ratio is not renewable, except for specific local changes; on the other hand - the possibilities for extended reproduction, improvement, restoration of the production capacity of land types are practically limitless.

Bukhara region accounts for 11.1% of the used agricultural land and 6.1% of irrigated agricultural land in the country. The region owns 5-6% of the republic's grain fields and 8-9% of cotton fields, cultivates 8-9% of the total grain harvest and 11-12% of the cotton harvest.

Today, the use of lands of Bukhara region has its own peculiarities. Although there have been a number of regional challenges in the use of these lands, the above statistics show that good results have been achieved in this area in relation to capacity. The lands of the region differ from other regions of the republic due to their territorial features and the problems formed here.

The total area of land within the administrative boundaries of Bukhara region is 4032286 hectares, of which about 5% - 20099 hectares of arable land (Table 2). 16.6 per cent of arable land, or 33,199 hectares, is in poor condition. Kagan (0.26 ha / person) and Alat (0.20 ha / person) districts have a great potential for the provision of arable land per capita. The lowest rates are in Gijduvan (0.07 ha / person) and Korovulbazar (0.07 ha / person) districts. This is due to the large population in Gijduvan district and the lack of arable land in Korovulbazar district.

Figure 1. Dynamics of changes in the quality of irrigated lands in the districts of Bukhara region, based on 100 points



It should be noted that the average quality score of all irrigated lands in the region, as in the Republic, has been declining sharply in recent years. In 1972, this figure averaged 62 points in the region, in 1991 - 58, in 1998 - 53, in 2010 - 50, in 2015 - 53 points, i.e. in 30 years the quality of irrigated lands in the region decreasedby 5 points (Figure 2).

Figure 2. Dynamics of the average quality score of irrigated lands of Bukhara region, based on 100 points

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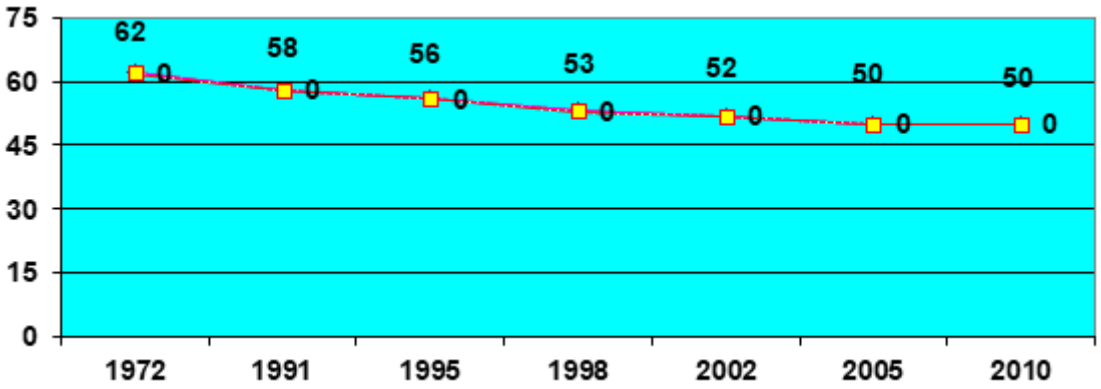

The main reason for the low economic productivity of irrigated lands in Bukhara region is the poor reclamation of lands in the region. The reclamation status of irrigated lands in the region has deteriorated by 10 per cent over the past 30 years, while the area of deserted lands has increased by 25 per cent. As a result of irrational use of water in such areas, the yield of agricultural crops, especially cotton, is twice as low as on irrigated, well-protected lands.

8.9% of irrigated lands in Bukhara region are in good reclamation condition, the remaining 91.1% are in poor condition (Table 4). The reclamation condition of 48.2 thousand hectares, or 17.5 percent of these lands is unsatisfactory.

Table 2. Information on the reclamation of irrigated lands of Bukhara region

Districts	**Total irrigated area**	**Including reclamation condition**					
		good		**satisfactory**		**unsatisfactory**	
		ha	%	ha	%	ha	%
Bukhara	30,2	1,7	5,6	24,6	82	3,9	12,4
Vobkent	21,6	1,9	8,8	17,7	82,0	2,0	9,2
Jondor	33,0	2,2	6,7	24,6	74,5	6,2	18,8
Kogon	18,5	1,7	9,0	13,1	71,0	3,7	20,0
Olot	21,4	1,5	7,0	11,8	55,1	8,1	37,9
Peshku	22,6	2,2	9,7	17,8	78,7	2,6	11,6
Romitan	27,6	2,4	8,7	20,9	75,7	4,3	15,6
Shofirkon	28,3	1,9	6,7	22,4	79,1	4,0	14,2
Korakul	25,1	1,6	6,3	15,5	62,0	8,0	31,7
Korovulbazar	19,7	3,1	16,0	14,7	76,1	1,5	7,9
Gijduvon	27,0	4,2	13,5	18,9	70,0	3,9	14,5
In region	274,6	24,4	8,9	202,0	73,6	48,2	17,5

90.4% of irrigated lands in the province were exposed to varying degrees of salinity. Of these, 6% - 15941 hectares are strong, 26% - 72504 hectares are moderate, 58% - 159618 hectares are low salinity. Only 9.4% of irrigated lands in the region are non-saline lands (Table 2).

For comparison, in the neighboring Kashkadarya region, 52% of land is non-saline.

The flatness of the relief of the region and the structure of the lands require that the drainage system be more densely populated than in other regions.

Table 3. Information on the salinity of irrigated lands in Bukhara region

Districts	**Total irrigated area, ha**	**Unsalted lands**		**Total area of salted soils**		**Including**					
						extensive		**medium**		**little**	
						ha	**%**	**ha**	**%**	**ha**	**%**
		ha	%	ha	%						
Bukhara	30198	18920	6	28310	94	2094	9	9667	32	15945	53
Vobkent	21546	19070	9	19640	91	1297	6	5340	25	13002	60

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Jondor	32984	27400	8	30250	92	1682	5	8000	24	20582	63
Kogon	18500	19730	11	18530	89	969	5	4922	27	10616	57
Olot	21467	16310	8	19810	92	1932	9	5162	24	12712	59
Peshku	22644	22290	10	20420	90	863	4	6657	29	12095	57
Romitan	27568	24590	9	25110	91	883	3	6124	22	18122	66
Shofirkon	28353	23930	8	25980	92	1204	4	6510	23	18246	65
Korakul	25064	19910	8	23080	92	1440	6	7591	30	14042	56
Korovulbazar	19765	30920	16	16240	84	1287	7	6719	34	8233	43
Gijduvon	26983	42380	16	22750	84	1690	6	5812	22	15243	56
In region	274638	265750	9,6	248100	90,4	15941	6	72504	26	159618	58

Although all irrigated lands need such a system, in practice 80.7% of these lands have such networks (Table 3). The total length of drainage networks in the region is 7686.1 km, including 747.03 km of highways, 2096.07 km of inter-farm ditches, 4839.52 km of internal networks. The average density of the drainage system in the total irrigated lands of the region is 29.0 p.m / ha.

Appendix 1.Provision of irrigated lands of Bukhara region with reclamation networks

Districts	**Irrigated lands** **1000. ha**	**The area provided with the ditch** **1000 ha.**	**Provided with drainage** **In %**	**The specific length corresponding to 1 square,** **p.m / ha**
Bukhara	30,2	28,0	92,7	26,35
Vobkent	21,5	14,54	67,6	10,38
Jondor	33,0	28,33	85,8	30,41
Kogon	18,5	17,1	92,4	34,95
Olot	21,4	20,83	97,3	46,53
Peshku	22,6	13,83	61,2	19,06
Romitan	27,6	21,90	79,3	20,22
Shofirkon	28,3	22,68	80,1	17,51
Korakul	25,1	22,72	90,5	40,71
Korovulbazar	19,8	14,28	72,1	20,48
Gijduvon	27,0	15,68	58,1	10,48
In region	274,6	219,9	80,1	27,7

V. CONCLUSION

According to studies, the average density of ditches in the region is 38 - 40 p.m / ha. the author recommends that the density be raised to at least 35 p.m / ha in the next 5 years. It is recommended to increase the density of reclamation networks, especially in Olot, Karakul and Jondor districts. Such areas include Kirlishon, Ardali in Olot district, Akkali, Akpartov in Karakul district, Varakhsha, Mokhon in Jondor district, Jarkok in Korovulbazar district.

The amount and level of operation of the existing drainage network system is not as required. According to our calculations, the technical and economic condition of 30% of drainage networks is unsatisfactory, the average utilization rate of drainage is 30%. Large amounts of economic and water resources are required to reduce salinity levels in saline areas. In Bukhara region, an average of 3.5-4.0 thousand m3 / ha of water is required for saline washing, and the same amount of water is used every year. This is an average of 0.9-1.0 million a year. m3.

The operation of the drainage system plays an important role in improving the reclamation of lands. In particular, the high efficiency of the system of inter-farm and intra-farm ditches, which directly affects the fields, ensures high economic productivity of lands. Currently, the authors estimate that about 70% of the inter-farm drainage system in the region does not work at the required level. They

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require large-scale cleaning and reconstruction. This, in turn, requires a large amount of economic and financial costs.

This is an average of 0.9-1.0 million a year. m3. Depending on the type and area of crops grown on irrigated lands in the region, water demand, ie plan, is developed. The limited amount of water (limit) is set by the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan depending on the level of water supply to the regions. The region mainly receives water for irrigation from the Amu Darya, so the limit is set according to the water level forecasts of the Amu Darya. Based on this approved limit, the limits are set in proportion to the amount of water required for the districts of the region.

Appendix 2. The amount of water consumed per hectare in the region in 2018 is as follows:

Years	Croparea,ha	Total amount of used water, mln.m3	Water used in 1 ha, 1000 m3
2018	274,9	3783,7	13,8

The system of ditches is of great importance in improving the reclamation of lands. In particular, the system of inter-farm and inter-farm ditches, which directly affect the fields, ensures high economic efficiency of land. At present, according to the authors, about 70% of the farms in the region do not work at the required level. They need a large-scale cleaning and reconstruction. This, in turn, requires significant economic and financial costs.

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