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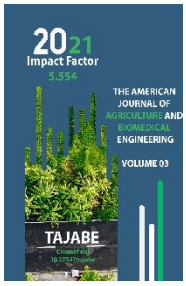

Prevent Salinization And Increase The Fertility Of Irrigated Sandy And Loamy Soils

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ABSTRACT

This article describes the properties of irrigated sandy and loamy soils in the Bukhara oasis, to determine the evolutionary changes in the soil, and to reduce the impact of degradation processes occurring in these soils, the article also emphasizes the importance of research on maintaining, increasing and protecting soil fertility and efficient use of land.

KEYWORDS

Soil fertility, agroecosystem, erosion, biogeocenosis, anthropogenic landscape, degradation.

INTRODUCTION

Land is the treasure of the people, the basic means of agricultural production. Increasing soil fertility and production capacity largely depends on the complex aimed at improving it, respectful attitude, and economy.

Improving the productivity of agricultural crops is one of the most pressing issues in our country today. It is no secret that increasing crop yields is primarily achieved by increasing their productivity based on an in-depth study

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of soil properties and procedures. In most cases, the experience of agricultural production ignores the properties of soils, especially their mechanical composition, state of aggregation, density, crop yields are mainly due to the application of mineral and organic fertilizers, and does not pay attention to the problem of soil fertility.

THE MAIN FINDINGS AND RESULTS

Managing and increasing soil fertility is one of the most pressing issues. Because fertility not only satisfies the demand for nutrients by providing it with mineral or organic fertilizers or quality plowing, but also the formation of a number of processes, including nutrients in the soil, water, air, heat and light, which are cosmic factors, and the balance between them depends on the provision [1.4.] Different climatic conditions and many soil types are widespread in the territory of the Republic, which makes it more difficult to solve the above problems. In particular, sandy and loamy soils are currently being developed and used in agriculture. The profile of sandy desert soils in porous inlets with low melkosiomy has the following characteristics. At the top there is a layer of porous sand, 3-5 cm thick, which is not exposed to the roots of the plant, which is exposed to the wind. Below it, there is a thick gray-covered horizon with a slightly grayish, less pronounced layered-layered structure of various plants, including the roots of the iliac plant. The roots of the plant are covered with small, water-resistant particles, such as beads (corals). Below it is a dense horizon of dark color, which contains a large number of roots and nests of insects. The humus horizon and structure are much more pronounced in the sands enriched with dust caused by wind erosion. The V horizon is often brown or even reddish in color, and the cavities are unstable. Sometimes carbonate spots are found on this horizon. Such soils are usually covered with skeletal damage as sand is blown over sandy and gravelly soils. At the bottom of this horizon is a gray, and below it is a dense brown horizon. According to the structure of the profile, these soils resemble silty brown soils. This suggests that in areas with low wind erosion and dense substrates, over time, sandy desert soils turn into desert-like brown soils. Sandy soils are characterized by a large specific gravity and a small volume weight, a small moisture content, a maximum hygroscopicity, and a small coefficient of fading. The amount of water that plants can use in the sand reaches 14-15%. The water permeability of the sand is very high. The mineralogical composition of the sands shows that 50-70% of it is quartz. In addition to quartz, sand contains minerals that contain calcium, phosphorus, magnesium and other ash elements. The nutrients in these sands are converted into assimilated forms as a result of chemical and biological erosion. Humus is low in sandy desert soils. Occasionally humus of 0.2-0.5%, but humus penetrates to a greater depth of soil (30-35cm). These soils are also low in nitrogen (0.01-0.03%) and phosphorus (-0.03-0.05%). Total potassium is more (1.2-2%) mobile phosphorus is less (4-7mg / kg), sometimes 20-22 mg / kg. Table 1. Carbonates are also found in the sands. Carbonates are mostly in the upper layers of the soil (30-50) cm more. The mechanical composition of sandy desert soils is rich in fine sand (0.25-0.05mm) and coarse dust (0.05-0.01) fractions.

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Table 1

Amount of humus, nitrogen, phosphorus, and potassium in sandy desert soils.

Depth of soil sample cm.	Humus %	Nitrogen %	Phosphorus		Potassium		C-N
			General %	Active mg / kg	General %	Active mg / kg	
Sandy desert soil in proluvial rocks, protected land							
0-7	0,48	0,031	0,030	7,5	1,22	212,5	8,6
7-40	0,24	0,017	0,059	5,0	1,25	225,5	8,2
40-80	0,18	0,011	0,051	4,0	1,24	212,5	9,5
80-95	0,10	0,005	0,029	5,0	0,95	50,0	11,6
Sandy desert soil in Aeolian deposits							
0-20	0,37	0,013	0,055	2,8	1,87	163,0	13,7
20-40	0,37	0,013	0,069	1,8	1,87	163,0	13,7
40-80	0,20	0,007	0,077	2,1	2,01	1841,0	16,0
83-125	0,14	0,006	0,073	3,5	1,83	101,0	13,5
Sandy desert soil in proluvial rocks							
0-7	0,19	0,003	Not specified	4,46	1,70	30,6	-
7-21	0,50	0,06		21,73	1,78	-	-
30-40	0,42	0,045		-	-	151,5	-
50-90	0,40	0,042		8,70	-	147,3	-
110-140	0,23	0,035		1,20	-	-	-

The physical properties of these soils are characterized by high solid phase density (2.6-2.7 g / cm_3) and relatively low density.

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Table 2

Physical properties of sandy desert zones.

Name of soil and place	Depth	Density g / cm³	Solid phase density g / cm³	General hollow.%.
Sandy desert soil	0-7	1,44	2,64	46
	7-40	1,47	2,65	44
	40-80	1,45	2,68	46
	80-95	1,58	2,62	40
	95-145	1,59	2,62	39
	145-196	1,58	2,61	39

The density increases to 1.44-1.47 g / cm³ in the upper horizons and 1.58-1.59 g / cm³ in the lower layers. Accordingly, the total porosity will be in the range of 44-46%. Maximum hygroscopicity is low (0.68-0.75). Water permeability is very high, 180 mm in 10 hours.2 Table.

In order to assimilate sandy and loamy soils, it is calcified in order to enrich it with fine-grained soil. To do this, the sandy field is fed fine-grained soil effluents, a lot of turbid water. During calcification, turbid particles rise to the top layer of the soil and some of the colloidal particles penetrate into the sand. The experience of radical improvement of sandy soils abroad is noteworthy. For example: In Hungary, 3-4 layers of organic matter are added to the soil. The thickness of each layer is 1 cm, the 1st layer is laid at a depth of 45-65 cm, the 2nd and, if necessary, the 3rd layer is laid 15 cm higher than the previous one after 3 years. When this is done, the roots of the plants in this layer develop strongly and cling to each other. Crop rotation and application of organic fertilizers and the use of structural polymers are important in the development of sandy soils. In some sandy plots, plants such as sand ermon (shuvok), kumqiyok are planted; in which it is used as pasture. If these plants are sufficiently developed, valuable fodder will be prepared from them. In this case, it is necessary to follow a certain regime, the order of use of pastures. It is advisable to take measures against wind erosion in these areas. Alfalfa, oats, alfalfa, corn and other fodder, melons and tree crops were planted on the developed lands. [1,203.]

Currently, on the left bank of the Zarafshan River in the Malik Desert, Karshi Desert, Surkhandarya, Sherabad and other deserts, great work is being done in the field of development of irrigated agriculture of brown-bald and barren soils and sandy desert soils. Increasing the fertility of irrigated sandy and loamy soils depends on the efficient and stratified use of mineral fertilizers. In order to protect the fertility of irrigated soils and

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increase crop yields, we recommend the following measures:

1. In dry years, it is possible to carry out spring wet irrigation, periodic leveling, economical use of irrigation water.
2. In order to increase soil fertility, it is expedient to introduce crop rotation and establish reserve trees.
3. In order to increase the efficiency of fertilizers, composting of organic fertilizers with mineral fertilizers, feeding of agricultural crops, application of 25-30 tons of organic fertilizers per hectare are highly effective.
4. Periodic cleaning of collector drainage systems on farms increases their efficiency and prevents the rise of groundwater.

Accordingly, all lands, whether intended for agriculture or not, should be protected. Although there is a risk of salinization and salt accumulation on irrigated agricultural lands, agricultural lands continue to lose their productivity under the influence of harmful chemicals accumulated in the soil. Excessively saline soils always produce less than non-saline soils. Such lands require more labor and money from the state and land users. Therefore, the preservation and continuous increase of land fertility, its rational and efficient use should be considered as an integral part of state land policy, an important part of the country's economic development programs. Soils are divided into five groups according to the degree of salinity: 1) unsalted; 2) slightly saline; 3) moderately saline; 4) strongly saline; 5) divided into brine. When grouping soils according to the degree of salinity, attention is paid to the total amount of water-soluble salts and chlorine in them. With increasing salinity, soil quality deteriorates, fertility decreases, and reclamation measures become necessary. Before planting saline soils in agriculture, it is necessary to carry out the following reclamation measures on such soils: - Careful development of water use plans based on agronomic rules, transition to a new irrigation system, construction of hydraulic structures from irrigation stations, water conservation, pollution work such as not doing is one of the most important measures to prevent soil salinity; - it is possible to remove and improve the salinity of brines and saline soils of different levels by stopping the continuous rise of groundwater saline through the capillary pathways and removing harmful salts accumulated in the soil; - To improve the physical and chemical properties of soils, it is necessary to put gypsum on these soils. Its feature is that it displaces sodium and calcium in the absorbing complex of the soil, as well as improves the physical condition of the soil; - Measures such as fertilizing saline and alkaline soils, deep tillage, introduction of large-scale irrigation, digging ditches and reducing their level are the main measures to improve the physical and chemical properties of the soil, increase its productivity. If agro-ameliorative measures are applied in a timely and correct manner, it is possible to plant crops in these soils and obtain consistently high yields from them; Salinity will increase further if the norm of saline wash water is not taken into account in the salinity of the soil, the depth and salinity of groundwater. Proper crop rotation improves the reclamation of saline and swampy soils, increases soil fertility and increases productivity. The reclamation effect of crop rotation is that the soil becomes more fertile, organic and nutrients are increased, physical properties are improved, and moisture

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evaporates less. [1.354.] It is possible to solve the above-mentioned problems without rational use of land resources, without strengthening measures to protect the soil layer from various erosion and other negative impacts, and without taking ways to save agricultural lands. Improving soil fertility depends in many ways on a set of measures aimed at improving it, to treat it with care and economy. With this in mind, it is very important to consistently accelerate agricultural production, develop solutions to problems related to the rational use of land resources, increasing the productivity of each hectare of irrigated land, its economic efficiency.

CONCLUSION

In this regard, the maintenance of soil fertility, its annual increase is an important task of agricultural specialists. [2.204.] It is no coincidence that the state is currently investing heavily in improving the reclamation of agricultural lands, restoring soil fertility and building reclamation systems, measures to use them.

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