

INCREASING THE FERTILITY OF SALINE SOILS OF THE LOWER AMUDARYO

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Abstract: This article presents information on soil salinity and changes in soil nutrients during the cultivation of cotton and winter wheat in the farms of Chimbay, Amudarya districts of the Republic of Karakalpakistan.

Key words: grassland alluvial, light mechanical composition, saline soils, humus, nitrogen, phosphorus, potassium, winter wheat and cotton.

Introduction: Today, "about 40% of degraded land in the world is located in the areas of countries with the highest poverty, which has a negative impact on the health and lifestyle of 1.5 billion people. In order to mitigate this situation, great attention is being paid to the use of resource-efficient innovative agro-technologies in the USA, Brazil, Canada, Australia, India, Europe, Asia and many other countries of the world to preserve, restore, increase and protect the productivity of the soils where the main agricultural products are grown." Therefore, it is one of the most urgent issues to find scientifically based solutions for maintaining and increasing soil fertility, minimum tillage, soil protection with the help of plant residues, application of fertilizers at the appropriate rate and time.

In the world, scientific research is being carried out in priority directions aimed at maintaining and increasing soil fertility, systems of scientific rotation and rotation, its use, continuous monitoring, the rate of fertilizers used for agricultural crops, the amount and balance of nutrients that are irreversibly leaving the soil, and resource-saving technologies. In this regard, the placement of crops depending on the productivity of agricultural land, stratified application of mineral fertilizers, meeting the demand of crops for nutrients during the growing season, different effects on the transformation of phosphate and potassium fractions in the soil, the influence of root residues and the nutrients they contain on soil fertility paying special attention to scientific research is one of the urgent issues.

The level of study of the problem. A number of foreign scientists R. Lal, P. Vlek, R. R. Lal, P. Vlek, R. R. Lal, P. Vlek, and R. Derpsch, R A. Kassam, T. Friedrich, E. J. Gonzalez-Sanchez, J. Lamers and republican scientists Z. Tursunkhodjaev, N. B. Kashkarov, M. A. Belousov, Q. M. Mirzajonov, T. P. Pirakhunov, K. M. Rozikov, Sh. N. Nurmatov, R. O. Oripov, J. S. Sattarov, Kh. Conducted by Sh.Tillaev, M.Tojiev, N.M.Ibragimov, B.I.Niyazaliev, F.B.Namozov, A.A.Iminov, U.E.Ismailov, F.Khoshimov and others. However, in conditions of meadow alluvial soils of the Republic of Karakalpakistan, scientific researches have not been carried out enough to restore the productivity of alternate planting of cotton and winter wheat in saline areas.

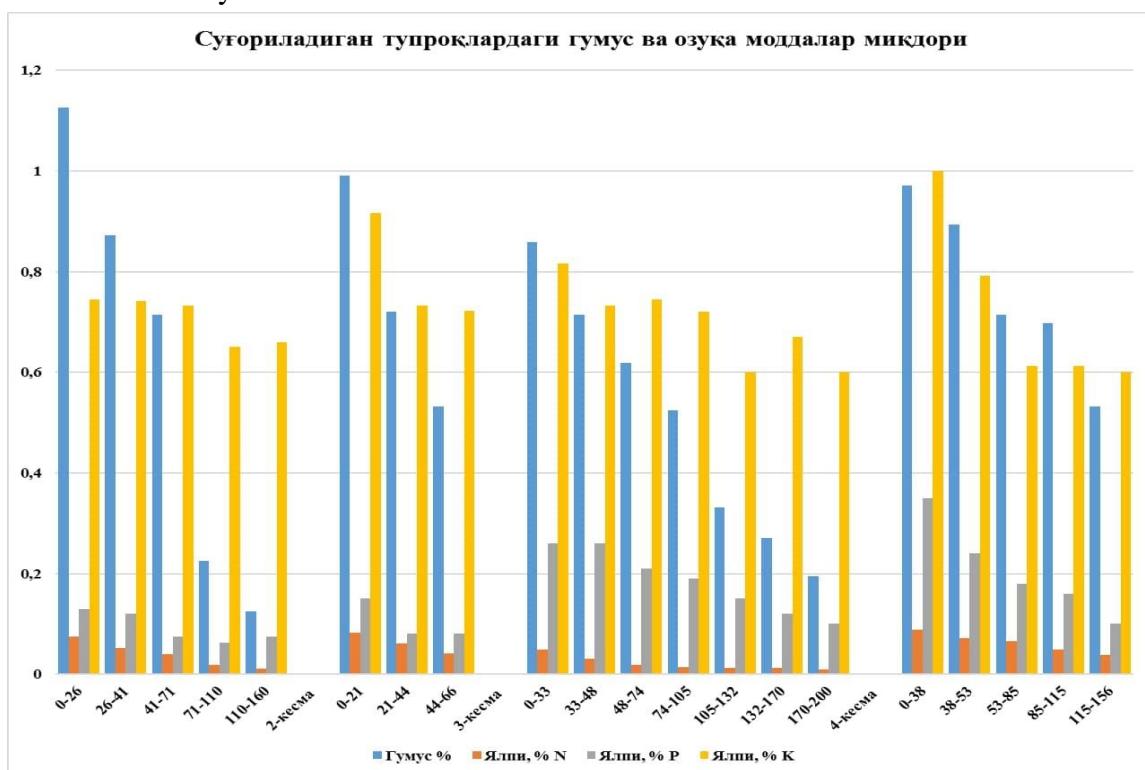
Results of the research: During our research, a significant change in the agrochemical properties of soils distributed in the territory of Chimbay and Amudarya districts was observed under the influence of salinity. It is known that humus is the main resource that ensures soil fertility and improves soil physical condition, agrochemical parameters, biological activity, structural condition, plant growth and

development conditions. soil fertility and the yield of agricultural crops will increase. The obtained data show that the soils of the studied area are low in humus. In all soils, a large amount of humus is distributed in the upper layers, and a significant decrease in the amount of humus is observed towards the lower layers.

The amount of humus is around 1.126% in the plowed layers of the alluvial soils of the irrigated meadow of the "Kayrat Kalimbay" farm in the cotton field scattered in Chimbay and Amudarya districts, and 0.872% under the plowed layer. In the fall wheat field, the humus content of the irrigated meadow alluvial soils of the "Kayrat Kalimbay" farm is around 0.991%, and under the arable layer, this indicator fluctuates around 0.721%. In the cotton field of the farm "Duschanov Rakhimboy" of Amudarya district, it is 0.859%, decreasing to 0.715% towards the next layer, in the winter wheat field, in the irrigated meadow soils of "Duschanov Rakhimboy" f/x, this indicator is 0.971%, and in the next layer it is 0.894% did.

The lack of humus is primarily due to the lack of plant cover, the reduction of microorganisms and enzymes in the soil. The humus layer appeared in short horizons, the amount of humus in deep layers decreases sharply. This indicates that the reclamation condition of these soils is very serious. "If we analyze the supply of humus according to the indicators of humus status in soils" developed by M.M.Tashqo'ziev, N.I.Shadievalar, newly irrigated sandy desert soils are average (humus content - 1.0-1.5%), and residual soils are low provided (humus content 0.5-1.0%) is suitable.

It was found that the total amount of potassium in the studied soils fluctuates around 0.744-1.0% in the upper layers, as it deepens along the soil profile, its amount decreases depending on the amount of humus in the soil and the mechanical composition (Table 1). The main source of potassium nutrition for plants is its mobile forms. Its amount is 90 mg/kg in the plowed layers of freshly irrigated sandy desert soils, 80 mg/kg under the plowed layer. The amount of potassium in the irrigated sandy desert soils is around 110 mg/kg, while under the plowed layer this indicator fluctuates between 103 mg/kg . "Duschanov Rakhimboy" in the autumn wheat field



Layer deep league, cm	Humm us %	Gross, %			N-NH ₃ Мг/кг	N-NO ₃ Мг/кг	Movement dust, mg/kg		CO ₂ carbonates, %	pH
		N	P	K			P ₂ O ₅	K ₂ O		
Alluvial soils of irrigated meadow "Kayrat Kalimbay", cotton field, Chimbay district										
0-26	1,126	0,075	0,13	0,744	25,4	5,5	35	90	7,52	7,4
26-41	0,872	0,052	0,12	0,742	20,2	3,5	20	80	7,83	7,4
41-71	0,715	0,039	0,075	0,732	17,4	3,0	12	55	8,92	7,3
71-110	0,225	0,018	0,062	0,65	15,1	1,0	8	12	8,9	7,3
110-160	0,125	0,011	0,075	0,66	12,1	1,0	4	10	8,39	7,3
Alluvial soils of irrigated meadow "Kayrat Kalimbay", winter wheat field, Chimbay district										
0-21	0,991	0,082	0,15	0,916	27,8	2,5	12	110	6,84	7,5
21-44	0,721	0,061	0,08	0,732	24,1	1,7	16	103	6,36	7,5
44-66	0,532	0,042	0,08	0,722	17,3	1,0	10	65	6,3	7,6
Alluvial soils of "Duschanov Rakhimboy" f/x irrigated meadow, cotton field, Amudarya district										
0-33	0,859	0,049	0,26	0,816	28,1	1,7	23	150	7,73	7,4
33-48	0,715	0,031	0,26	0,732	21,9	3,1	19	135	7,84	7,4
48-74	0,618	0,019	0,21	0,744	19,7	2,0	13	90	7,89	7,3
74-105	0,525	0,014	0,19	0,72	15,6	4,8	12	60	8,47	7,3
105-132	0,332	0,012	0,15	0,6	14,3	3,7	10	55	6,88	7,3
132-170	0,27	0,013	0,12	0,67	13,7	1,4	9	40	6,51	7,2
170-200	0,195	0,01	0,1	0,6	11,7	4,2	6	30	6,52	7,3

f/x was 150 mg/kg in irrigated meadow alluvial soils and 135 mg/kg towards the next layer, 148 mg/kg in old irrigated meadow alluvial soils, and 128 mg/kg in the next layer.

It is known that exchangeable potassium plays an important role in plant nutrition. It also has a positive effect on the physico-chemical properties of plants and is considered one of the most important elements in their life. The results of the research showed that; Analyzing based on the manual "Differentiated use of mineral and organic fertilizers in irrigated soils" published by A.J.Bairov [2014], the soils are moderately supplied with the mobile form of phosphorus (15-30 mg/kg), poorly supplied with the mobile form of potassium (100 -200 mg/kg). The studied hydromorphic soils have almost the same parameters in terms of carbonate content. In all soils, the carbonate content fluctuates between 6.94 and 8.75% along the profile, depending on the mechanical composition of the soil. Soil reaction is its most characteristic and sensitive sign. The soil environment represents the most important features of soil chemical composition, all conditions of soil formation, soil genesis, as well as the most subtle aspects of soil changes. It is known that most agricultural crops grow well when the soil environment is close to neutral and weakly alkaline (pN=6-7, pN=7.1-8.0). The soil reaction medium, that is, its acidity, neutrality or alkalinity, is of great importance for the chemical and biochemical properties of the soil. During our research, the results of determination of the soil pH values showed that the studied soil mainly has a weak alkaline environment, the pH value of the soil fluctuates around 7.4-7.7.

According to the results of the analysis, it can be seen that the distribution of nutrients in the soil along the profile depends on its mechanical composition and the amount of humus. That is, in soils with different mechanical composition, the amount of total and mobile forms of nutrients is also different. Also, with an increase in salinity, the amount of humus and nutrients decreases from one to the minimum level. With the deterioration of the most important agronomic and agrophysical properties of the soil, there is a sharp decrease in the amount of humus. At the same time, there is a

significant decrease in the amount of the main plant nutrients (nitrogen, phosphorus, potassium) in irrigated lands. The low supply of these soils with the amount of basic nutrients can be attributed to the lack of plant residues, as well as the unfavorable climatic characteristics of the region, which are characterized by high summer temperatures, relatively low relative humidity, and frequent winds that cause rapid evaporation of moisture from the soil surface. all this in turn causes intensive salinization and an increase in the demand of plants for water, (Fig. 1).

Conclusion: According to the results of scientific research, it was determined that NPK absorption of crops from 1 hectare of land and the amount of N:P:K used to create 1 t of crop depends on the previous crop types, as well as the mineral fertilizer standards used in them. ha) and it is recommended to feed cotton at the rate of N240P170K125 kg/ha.

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