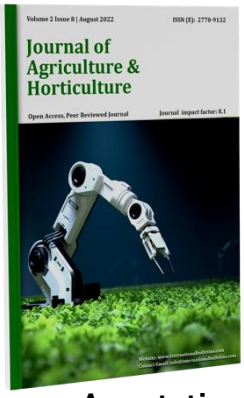

FERTILIZER NORMS FOR COTTON AND THEIR INFLUENCE ON THE AGROCHEMICAL PROPERTIES OF THE SOIL

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Annotation. The Republic of Karakalpakstan is facing environmental, socio-economic problems with the Aral Sea. Measures to counteract the negative effecc of abrupt changes in natural conditions in the Aral Sea region, in particular: improving the agro-physical and agrochemical conditions of irrigated soils in the region, maintaining soil fertility and the introduction of new agro-technologies for growing crops Carrying out of wide-ranging scientific-experimental works and offers practical application, rational use of land resources, application of intensive methods in the field of expansion of agricultural lands, introduction of modern agro-technologies for water and resource saving, modern mineral and organic fertilizers. perform the necessary tasks on the organization of the system of use of dogs.

Keywords. *soil, salinity, agrochemistry, humus, nitrogen, phosphorus, potassium, fertilizer.*

Introduction. Today, the world pays attention to the rational use of available water resources in the cultivation of agricultural crops, and a number of scientific studies are being conducted in this direction. In each country, a number of achievements are being made in improving irrigation regimes based on the types of crops grown, soil and climatic conditions. According to analyses by world scientists, research is being conducted on irrigation based on cotton seedling density, drip and sprinkler irrigation based on soil texture, and establishing traditional irrigation regimes based on soil texture. High results are being achieved through the application of resource-intensive technologies in cotton irrigation and fertilization. Chapter 3.3 of the Decree of the President of the Republic of Uzbekistan dated February 7, 2017 No. UP-4947 "On the Action Strategy for the Further Development of the Republic of Uzbekistan" provides for the introduction of digital technologies in agriculture."measures for the efficient use of water resources through the introduction of innovative smart irrigation practices" have been defined. Therefore, developing effective technologies for cultivating each newly developed cotton variety in various soil and climatic conditions is crucial.

Literature review. Large-scale research has been conducted by domestic and foreign scientists on the development of irrigation regimes and mineral fertilizer application rates for cotton varieties in various soil and climatic conditions of our republic. In particular, M.P.Mednis, S.N.Ryzhov, N.F.Bespalov, S.A.Gildiyev, M.A.Belousov, K.M.Mirzajonov, A.E.Auliekulov, B.S.Mambetnazarov, Sh.N.Nurmatov, N.M.Ibragimov, M.Hamidov, N.Orazmatov. U. Norkulov, A.S. Shamsiev, S.Kh. Isaev, M.A. Avliyakulov, M.M. Khasanov, N.Kh. Durdiev, abroad C.W. Bednarz, S.C. Brown, S.R. Evett, Hezhong Dank. A. Khalilian Extensive research has been conducted by scholars such as M.S. Yonesa. In the experiments of Z.A. Artukmetov and H.Sh. Sheraliyev [18; In the Northern climate region, where groundwater is deep (3-4 m), medium and heavy loamy gray soils were irrigated once at a rate of 800-1000 m3/ha earlier than the cotton flowering phase, while in light loamy soils, irrigation was

carried out twice at a rate of 600-800 m3/ha for 14-16 days at intervals. It has been proven that the first irrigation is most effective when 3-4 fruiting buds appear on the plant, and the second irrigation is during the budding phase.

Methods. The scientific significance of the research results lies in the fact that when cultivating medium-fiber cotton varieties Sultan, Chimbay-5018, and S-4727 in irrigated meadow-alluvial soils of the northern region of our republic, changes in the agrochemical and agrophysical properties of the soil, irrigation regimes, and mineral fertilizer (NPK) norms in the field determine the growth, development, and yield of cotton varieties. The research work was carried out in the Republic of Karakalpakstan, Khojeli district, Kulap village of Karakalpakstan massif, office number 620 "Khojamurad Otambetov" farm.

When we analyzed the soil of the field agrochemically before conducting the research, it was found that the amount of humus in the soil was low, the active forms of nitrogen and phosphorus were moderately supplied in the soil layer, in the subsoil layer, and potassium was provided to a low level (Table 1).

Table 1

Agrochemical characteristics of the soil of the study area (at the beginning of the experimental period).

Soil layers, cm			General forms, %		Active forms		
	Humus	N	P	K	NO3	P2O5	K2O
0-30	0,775	0,068	0,142	1,70	2,8	21,4	130
30-50	0,58	0,052	0,120	1,48	2,2	18,8	122

The initial agrochemical details of the soil of the experimental field for the 2024 year were determined in the fall of 2023, and according to the results, the total humus content in the soil layer, i.e. 0-30 cm, is 0.775%, total nitrogen is 0.068% and phosphorus is 0.142%, and the soil under the soil layer, i.e. 30-50 in the cm layer, these indicators are proportionately 0.580; 0.052 and 0.120%.

Results. The active forms of nutrients are 2.8 mg/kg of active nitrogen, 21.4 mg/kg of phosphorus, and 130 mg/kg of potassium in the tillage, i.e., 0-30 cm layer of the soil. It was found that active nitrogen is provided to a very low level, active phosphorus is provided to an average level in the ploughing layer and to a low degree in the sub-ploughing layer, and exchangeable potassium is provided to a low level. According to the average agrochemical results obtained from 5 points at the end of the season of the 2023 experiment for the 2024 experiment, the amount of total humus in the soil in the first option is 0.735% in the 0-30 cm layer, total nitrogen 0.060%, total phosphorus 0.127%, total humus in the 30-50 cm layer 0.466 %, total nitrogen was 0.041%, total phosphorus was 0.102%. The amount of active nitrogen in the soil is 3.90 mg/kg in the 0-30 cm layer, phosphorus 13.6 mg/kg, potassium 145 mg/kg, nitrogen from active forms in the 30-50 cm layer is 3.01 mg/kg, phosphorus 11.2 mg /kg, potassium 110 mg/kg, the amount of nutrients in the soil compared to other options, when the Sultan cotton variety feeding standard N200P140 K100 is applied, the amount of humus is 0.741%, gross nitrogen 0.061, gross phosphorus 0.127, active nitrogen 4.10 mg/kg, phosphorus 13.8, potassium was 50 mg/kg, and in our variant, the amount of humus increased by 0.10%, total nitrogen by 0.1%, and total phosphorus by 0.1%, the amount of total phosphorus decreased by 0.02%, active nitrogen by 0.5 mg/kg, active phosphorus by 0.4

mg/kg, increased by 0.5% in the 0-30 cm layer compared to ezorate when the Sultan cotton variety was given in a ratio of 250:175:125, total phosphorus increased by 0.4 mg/kg, active nitrogen by 0.55, phosphorus by 0.4 mg/kg, and no change was noticed in potassium (Table 2). From this, it can be concluded that the level of nitrogen supply of the soil of the research area is very low, phosphorus is average in the ploughing layer, and it is found in the low degree in the sub-ploughing layer and low in potassium.

Table 2

Agrochemical characteristics of the experimental field soil during its use.

Variants	Cotton types	norm of mineral fertilizer, kg/ga	Soil layer	Humus, %	General forms of NP, %		Active forms of NPK, mg/kg		
					N	P2O5	NO3	P2O5	K2O
					%	%	mg/kg	mg/kg	mg/kg
1	Chimboy-5018	200:140:100	0-30	0,735	0,060	0,127	3,90	13,6	145
			30-50	0,466	0,041	0,102	3,01	11,2	110
2	Sulton	200:140:100	0-30	0,741	0,061	0,127	4,10	13,8	150
			30-50	0,473	0,043	0,103	2,90	11,8	116
3	Chimboy-5018	225:157,5:112,5	0-30	0,731	0,058	0,120	3,20	13,1	140
			30-50	0,470	0,040	0,101	2,61	10,8	105
4	Sulton	225:157,5:112,5	0-30	0,740	0,060	0,125	4,15	14,2	152
			30-50	0,473	0,042	0,100	3,38	12,1	120
5	Chimboy-5018	250:175:125	0-30	0,735	0,061	0,126	4,20	13,9	150
			30-50	0,465	0,041	0,102	3,45	12,0	122
6	Sulton	250:175:125	0-30	0,740	0,058	0,123	3,58	13,4	140
			30-50	0,473	0,039	0,101	2,70	11,0	110

Results. From the obtained results, it can be concluded that the amount of nutrients in the soil was almost unchanged due to the annual use of mineral fertilizers, and the soil fertility did not decrease. In order to grow a high quality cotton crop, cotton requires a high amount of nitrogen, phosphorus and potassium fertilizers in these soils.

Summary: Today, the productivity indicators of the irrigated soils of the Aral region are decreasing due to adverse ecological conditions, which are essential for plants. Fertilization norms of Chimboy-5018 and Sultan cotton varieties depending on soil fertility indicators and biological indicators of cotton varieties were developed.

References:

1. Avliyokulov A.E. Prospects of the farming system of our country. Tashkent. "Navroz". 2013
2. Mambetnazarov B.S., Oteuliev J.B. Development of irrigation system of S-4727, Chimboy-5018 and Sultan cotton varieties in the conditions of meadow-alluvial soils of the Republic of Karakalpakstan/ Journal of science and education in Karakalpakstan. 2021 No. 1 (16). p.54-57
3. Saidova M.E. Modern approaches to the diagnosis of the ecological-biological condition of irrigated meadow-alluvial soils of the Aral Sea region (on the example of Amu Darya and Chimboy districts): Dissertation abstract of Doctor of Biological Sciences.- T.: 2019. p. 80
4.Khaydarov A., Orazmatov N. Influence of irrigation regimes, norms of mineral fertilizers, and plant density on the amount of water absorbed by cotton varieties // Agroilm Scientific Appendix of the Journal of Agriculture and Water Management of Uzbekistan. Tashkent, 2019. (62) -B 11