International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-12| 2023 Published: |22-12-2023|

OPTICAL DENSITY OF HUMIC ACIDS OF IRRIGATED SOILS OF BUKHARA OASIS

https://doi.org/10.5281/zenodo.10426728

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Abstract.
In the article, the group and fractional composition of the humus of the saline soils of the Bukhara oasis, the optical density of humic acids, the element composition and the amount in the mechanical fractions were determined.

Keywords
Genetic-geographical, optical density, irrigated soils, coagulation, Cgk:Cfk, E4:E6.

Today, in the last 50 years, the area of cultivated areas in the world has increased by 12%, and under the influence of irrigation, 300 km^3 of collector-reservoir waters are formed per year , including this indicator in the CIS countries - 90 km^3 , in the USA - 30 km ^{3} is organizing As a result, the global increase in inroduction in some regions leads to the degradation of land and water resources, the ecological condition of soil and groundwater, and the negative impact on water [149]reserves . Therefore, while the area of saline lands is expanding due to natural processes and anthropogenic influences, it is urgent to identify the factors that cause salinity, to prevent it, to preserve and restore the fertility of saline soils, and to use them rationally in agriculture is one of the tasks.

Research methods. Analyzes were carried out according to the standard methods of field, laboratory and chamber works generally accepted in soil science. Genetic-geographical, lithological-geomorphological, comparative chemical-analytical and profile methods were used in the research. Comparative-geographical and profile-geochemical methods were used for placing soil sections and taking samples. Chemical analyzes were carried out according to E.V.Arinushkina's " Руководство по химическому анализу почв ", " Методы

[149] **core.ac.uk. fao.com. https://lex.uz.**

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агрофизических исследований почвы Средней Азии " generally accepted methodological manuals. Fractional-group composition of humus was determined according to I.V.Tyurin's method, V.V.Ponomaryova, T.V.Plotnikova's modification, the humic condition of soils was determined according to the methodological instruction of M.M.Tashkoziyev. Microbiological analyzes E.N. Mishustin (1972) and D. Zvyagentsev (1980), enzymatic activity of soils. It was conducted according to the methods of A.Galstyan (1974) . Matematical- statistical processing of the obtained results was done on the basis of Microsoft Excel programs according to the Dospekhov method. ArcGIS 10.6.1 when creating maps. software was used.

Optical density of humic acids

In order to determine the nature of the humic substances of the irrigated soils of the Bukhara oasis, their optical density was analyzed. For this purpose, using the methods of M.M.Kononova (1951,1963), N.B.Belchikova (1951), Ye.Welte (1955), D.S.Orlov (2004), it was conducted in the 465-726 nm range of the spectrophotometer, which depends on the conditions of soil formation. shows genetic dependence of acids. In our analysis of the optical density of humic acids, the decrease in light and the expansion of the E4:E6 ratio were 5.0 in newly irrigated brownish soils (Karovulbozor district). (Section 1). The expansion of the E4:E6 ratio was 4.4 in newly irrigated red-brown meadow soils (Karovulbozor district). (section 2). In newly irrigated barren soils (Shorkol kan.), the expansion of the E 4:E6 ratio was 6.8. (section 3). Formerly irrigated grassland barren soil (Bukhara subaerial delta of the Zarafshan River) had an expansion of the E4:E6 ratio of 6.3. (Section 4). Formerly irrigated meadow - alluvial soil. (Bukhara subaerial delta of the Zarafshan River) the expansion of the E4:E6 ratio was 4.4. (Section 5). The expansion of the E4:E6 ratio was 3.9 in the old irrigated meadow - alluvial soil (Karakol subaerial delta of the Zarafshan River). (section 6).

The former irrigated meadow - alluvial soil (Karakol subaerial delta of the Zarafshan River) had an expansion of the E4:E6 ratio of 4.2. (section 7). In the newly irrigated meadow-alluvial soil (Karakol subaerial delta of the Zarafshon River), the expansion of the E4:E6 ratio was 4.1 (section 8). Karakol subaerial delta) the expansion of the E4:E6 ratio was 4.0. (section 9).

The optical density of humic acids of protected soils is higher than that of arable soils. The optical density data of the studied humic acids are correlated with E4:E6, Cgk:Cfk, where the narrowing of the E4:E6 ratio is associated with the increase of the optical density in low-humus soils, and the widening of E4:E6 is on average was observed with a decrease in the optical density of the soil. In soils with

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high humidity, high biomass, good physical and physicochemical conditions, the aromatic nucleus of humic acids condenses, and on the contrary, in soils with low moisture, the aromatic nucleus of humic acids condenses slowly, the limit of coagulation of humic acids corresponds to their optical properties.

Table 4 .2.2

Optical density of humic acids of irrigated soils of Bukhara oasis (2018-2019)

Soil	Depth, sm	Wavelenght, nm							E_4: E_6
		726	665	619	574	533	496	465	
Section 1. Newly irrigated brown soils (Karovulbozor district).	0-20	0.20	0.26	0.41	0.58	0.76	1.21	1.30	5.0
Section 2. Newly irrigated brown grassland soils (Karovulbozor district).	0-25	0.25	0.32	0.42	0.60	0.95	1.11	1.41	4.4
Section 3. Newly irrigated barren soils (Shorkol kan.)	0-22	0.05	0.12	0.18	0.31	0.44	0.52	0.82	6.8
Section 4. Formerly irrigated grassland barren soil (Bukhara subaerial delta of the Zarafshan River)	0-25	0.19	0.28	0.43	0.65	1.20	1.52	1.79	6.3
Section 5. Old irrigated meadow - alluvial soil. (Bukhara subaerial delta of the Zarafshan River)	0-25	0.15	0.27	0.38	0.44	0.55	0.84	1.21	4.4
Section 6. Old irrigated meadow - alluvial soil. (Karakol subaerial delta of Zarafshan river)	0-25	0.40	0.51	0.65	0.89	1.31	1.54	2.01	3.9
Section 7. Old irrigated meadow - alluvial soil. (Karakol subaerial delta of Zarafshan river)	0-28	0.35	0.44	0.57	0.83	1.21	1.64	1.86	4.2
Section 8. Freshly irrigated meadow - alluvial soil. (Karakol subaerial delta of Zarafshan river)	0-17	0.30	0.46	0.65	0.84	1.27	1.62	1.90	4.1
Section 9. Freshly irrigated meadow - alluvial soil. (Karakol subaerial delta of Zarafshan river)	0-22	0.35	0.46	0.60	0.86	1.23	1.65	1.87	4.0

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Conclusion

To determine the relationship between indicators of the humus state of soils, correlation coefficients were calculated. Between the type of humus (Cgk:Sfk) and the total amount of carbon in the soil (Sum) r = 0.26-0.86, humus (r = Between the relative content of humus (Cgk: Cfk) type and humic acids (Cgk) 0.25-0.85, between humus (Cgk:Cfk) type and the II-reaction of humic acids (Ck) r = 0.29-0.79, positive correlation found between optical density of humic acids (E■(0.001% HA@465nm,1cm)) and type of humus (Cgk:Cfk) r = 0.33-0.85. The correlation between fulvic acids and other indicators of humus is weak.

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