ISSN 2181-3187

SHOFIRKON DISTRICT IS AN AGROPHYSICAL PROPERTY OF SOILS THAT HAVE BEEN IRRIGATED SINCE ANCIENT TIMES

Bukhara State University Associate
Professor of Agronomy and Soil Science Department
Nodira Khakimova Khairilloyevna
Ramazonova Charosbonu Abdurashid kizi
Agronomy and soil science

Annotation: The Shofirkon district stands as a testament to the enduring legacy of ancient agricultural practices. Through centuries of irrigation, its soils have developed unique agrophysical properties, shaping the region's agricultural landscape. This article delves into the historical significance, literature analysis, methodologies employed, and findings regarding the agrophysical properties of soils in Shofirkon. Additionally, it discusses the implications of these findings and offers suggestions for sustainable agricultural practices in the district.

Keywords: Agrophysical properties, irrigation, soil fertility, shofirkon district, ancient agriculture.

Shofirkon District, nestled in the heart of an ancient agricultural region, holds a profound historical significance in the realm of soil irrigation and cultivation. For millennia, its inhabitants have practiced irrigation, enriching the soil and fostering a vibrant agricultural ecosystem. This article explores the agrophysical properties of soils in Shofirkon, shedding light on the enduring legacy of ancient agricultural techniques and their impact on soil fertility.

A comprehensive review of literature reveals the rich tapestry of agricultural history in Shofirkon District. Ancient texts and archaeological findings attest to the intricate irrigation systems employed by early settlers, showcasing their ingenuity in harnessing water resources to cultivate the land. Furthermore, studies on soil composition and fertility highlight the correlation between sustained irrigation and the development of unique agrophysical properties in Shofirkon's soils.

To unravel the agrophysical intricacies of Shofirkon's soils, a multidisciplinary approach was adopted. Soil samples were collected from various locations within the district, encompassing different irrigation regimes and land use patterns. Laboratory analyses, including particle size distribution, soil moisture content, and hydraulic conductivity, were conducted to assess the physical properties of the soil.

In most irrigated soils, the specific gravity has a smaller indicator in the upper layers than in the lower ones, the reason for this is that the amount of humus in the

ISSN 2181-3187

upper layer of soils is slightly higher. The comparative weight indicators of irrigated grassland soils of the Bukhara oasis in general do not differ sharply from each other, and they are not even a rapidly changing size.

The volume weight of the soils of the studied areas is variable and varied with respect to the specific gravity. This explains why the processes taking place in soils are special. The volume weights of the soils studied vary in different regions, and there is no significant difference between them.

In the case of old-irrigated grassland soils of the Kogon and Jondor districts, however, it is observed that heavy agricultural techniques have compacted the soil layers much higher than the optimal density, as a result of the introduction of land into the fields several times in its still physically immature state and the failure to comply with irrigation procedures.

In the conditions of irrigated soils of the Bukhara Oasis, as the mechanical composition becomes heavier, the density of soils is also determined to be slightly higher.

At the same time, strong compaction is observed not only in the upper layers of soil cuttings, but also in their lower layers. According to the data obtained, if the irrigation carried out over the years causes the breakdown of soil aggregates, continuous processing of the soil in the plowing layer is an event aimed at preventing its compaction.

Under the influence of irrigation and agrotechnical measures, in order to eliminate the compaction of the under-plowing and lower layers of the irrigated grassland soils of the Bukhara Oasis, it is primarily advisable to loosen the lands as deeply as possible, and plant perennial grass and legumes under-processing.

In irrigated soils, the amount of water (moisture), its movement, the amount of easily soluble salts, the increase in moisture and its retention, the air supply of the root nutrition layer will directly depend on the porosity of the soils.

From the above, it can be said that the comparative weight of irrigated grassland soils is low in the upper layers, does not differ sharply from each other, and they are not of rapidly changing size. It was observed that heavy agricultural techniques on old-irrigated grassland soils were repeatedly introduced into fields in the physically immature state of the Earth and compacted soil layers above acceptable density (1.55-1.60 g/cm3) as irrigation procedures were not followed, soil density was also found to be slightly higher as mechanical composition became heavier. In old-growth irrigated grassland soils, the total porosity is 47-51% in the upper layers. In the lower layers, however, a sharp decrease is observed in the range of 38-45%, a condition considered unsatisfactory. Usually the porosity is large in the upper layer, decreasing towards the lower driving lower layer.

ISSN 2181-3187

The observed agrophysical properties signify the enduring impact of ancient irrigation practices on Shofirkon's soils. Through centuries of cultivation, irrigation has transformed the soil matrix, enhancing its capacity to support plant growth and sustenance. However, challenges such as salinization and soil degradation necessitate careful management strategies to preserve soil fertility and ensure sustainable agricultural practices in the district.

Conclusions and Suggestions:

In conclusion, the agrophysical properties of soils in Shofirkon District bear witness to the enduring legacy of ancient irrigation practices. To safeguard this legacy and promote sustainable agriculture, concerted efforts are needed to mitigate soil degradation, enhance water efficiency, and adopt modern irrigation techniques. Integrating traditional knowledge with contemporary innovations holds the key to preserving the fertility of Shofirkon's soils for future generations.

In light of these findings, it is imperative to develop tailored strategies for soil conservation and sustainable land management in Shofirkon District. Embracing agroecological principles, promoting crop diversification, and implementing precision irrigation technologies can mitigate the adverse effects of intensive agriculture while fostering resilience in the face of environmental challenges. By honoring the wisdom of the past and embracing innovation, Shofirkon can continue to thrive as a beacon of sustainable agriculture in the modern era.

References.

1. Qurvontoev R., Xalberdieva M.R.Tuproqda qatqaloq hosil bo`lishini oldini olish usullari. // Tezisы dok. res. konf., - Guliston, 1994.- 228 b.
2. Qurvontoev R. Tuproq unumdorligini oshirish usullari. // Tuproq unumdorligini oshirishning dolzarb muammolari, ilmiy to`plam. -Toshkent, 1995. - B. 30-33.
3. Kurvantaev R. Musurmonov A. Tuproq fizikasi. - Guliston. 2011. -120 b.
4. Qurvantoev R., Turg`unov M., Musurmonov A.Tuproq unumdorligini oshirishda ular agrofizik xossalarini e`tiborga olgan holda ishlov berish masalalari. // Tuproq resurslaridan samarali foydalanishning ilmiy asoslari. Maqolalar to`plami, - Toshkent, 2011. - B. 142-148.
5. Nazarova S.M., Kungirov H.N., Kurvantaev R.K., Dadamukhamedova M.R. The main factors of soil formation and their evolution in the Zerafshan valley. // In the collection: Ecological condition of the natural environment and scientific and practical aspects of modern reclamation technologies Collection of scientific papers. Ryazan, 2016.60-66pp.
6. Nazarova SM, Kurvantaev R. Mechanical composition of irrigated soils of the Bukhara oasis. / Actual problems of modern science. Scientific journal No. 4 (101), 2018. 187-190pp

7. Хакимова Н.Х., Артикова Ҳ.Т., Акрамова П.А. Некоторые свойств почв в орошаемой пустынной зоны Бухарского Оазиса. / O‘zMU Xabarlari.-Toshkent, 2018. №3/1.-B.296-299.(03.00.00;№9).
8. Hakimova N.X.,Kurvantayev R. Evolution of raflux soils of the midrange of the valley Zerafshan./ Annali-d’Italia. Рим №4/2020.- P. 68-71.
9. Hakimova N.X., Tokhirov B.B., Rakhmatova Z.B.,Sayfiyev T.F. Dynamics of enzyme activity in salted soils. / Novateur publications Journal NX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581- 4230 Volume 6, Issue 10, Oct. -2020. P.301-303.
10.Ходжимуродова Н.Р, Хакимова Н.Х., Тагаева М.В., Камилов Б.С. Биологическая активность орошаемых лугово-аллювиалных почв в зависимости от степени засоленности. / Научное обозрение. Биологические науки. -Москва, №1 за 2021.-С. 27-31 (03.00.00;№23).
11.Hakimova N.X., Tokhirov B., O’ktamova M., Akramova M. Mobile phosphorus and potassium in the soil determination / International Journal for Innovative Engineering and Management Research.www.ijiemr,org doi:10.48047/ijiemr/v10/104/111 .vol10 issue 04, april2021.impact factor 7.819.
12. Курвантаев Р., Мазиров М.А., Хакимова Н.Х., Солиева Н.А. Эволюция и прогноз развития орошаемых типичных и светлых серёзомов на третьей терассе реки Зарафшан. / Владимирский земледелец. Научно-практический журнал. №4(98) 2021 DOI:10.24412/2225-2584-2021-4-14-20.
13.Hakimova N.X., Islomova U. Biological activity of old irrigated meadow soils of “Mirzo Jamshid” farm of Shafirkan district of Bukhara region.// Современные научныеи исследования. Актуалъные вопросы, достижения и инновации. Сборник статей XXII Международный научно-практической конференции. - Пенза. 2021 - С. 26-28.
14.Курвантаев. Р., Хакимова Н.Х., Орошаемые почвы средней части долины Зарафшана. // Почвы-стратегический ресурс России. Тезисы докладов VIII съезда Общества почвоведов им. В.В.Докучаева и Школы молодых ученых по морфологии и классификации почв.-Москва-Сыктывкар, 2021 г. Часть 2. С. 232-234. Skopus.
15.Курвантаев. Р. Хакимова Н.Х. Изменение химического состава почв нижнего и среднего течения реки Зарафшан.// IV Международной научно-практической конференции «Актуальные научно-технические и экологические проблемы мелиорации земель». – Горки. 2022. – С.128-135.
16.Курвантаев. Р., Хакимова Н.Х. Почвы средней части долины Зерафшана. // Национальная академия наук Беларусси институт почвоведения и агрохимии. Плодородие почв и эффективное применение удобрений. Материалы

международной научно-практической конференции -Минск,22-25 июня 2021.-С.100-103.
17.Ходжимуродова Н.Р., Хакимова Н.Х., Тураева Н.Н. Микроорганизмы орошаемых почв Бухарского Оазиса. / QarMII Innovatsion texnologiyalar. Innovative technologies.Ilmiy-texnik jurnal - Qarshi. 2021/1(41)-son .B.72-76 .
18.Hakimova N.X., Isroilova N.X., To'ymurodov Sh.T., Boboyev A.H. The importance of microorganisms in the saline soils of the Bukhara oasis. / Laboratorium WIEDZY Artur Borcuch Gospodarka I Innowacje Volume: 21/2022. Impact Factor: 8.01.
19.R. Kurvantaev, N. Khakimova, Soils of the middle part of the Zerafshan Valley, National Academy of Sciences of Belarus Institute of Soil Science and Agrochemistry. Soil fertility and efficient use of fertilizers Proceedings of the international scientific and practical conference, pp. 100-103, Minsk, June 22-25 (2021)
20. N.Kh. Khakimova, et.al., European journal of molecular & clinical medicine 9(7),10048-10062 (2022)
21.N.X. Hakimova, et.al., The importance of microorganisms in the saline soils of the Bukhara oasis. Laboratorium WIEDZY Artur Borcuch Gospodarka I Innowacje
22. R. Kurvantaev, N. Khakimova, Characteristics of the current state of the soil cover in the lower and middle parts of the Zarafshan River, Modern trends in the scientific support of the Agro-industrial complex monograph pressto Ivanovo-Suzdal, p.16-23(2022)
23. R. Kurvantaev, H. Khakimova, Changes in the chemical composition of soils in the lower and middle reaches of the Zarafshan River, IV International scientific and practical conference "Actual scientific, technical and environmental problems of land reclamation", p.128-135 Hills (2022)
24.Rakhmon Kurvantayev, Nodira Khakimova,and Bobirjon Vafoyev Chemical properties ofZarafshon lower and middle flow soils. Moskva Kazan /E3S Web of Conferences 389, 04015 (2023)