“THE SIGNIFICANCE OF STUDYING THE BIOGEOCHEMICAL MIGRATION OF SULFUR COMPOUNDS IN THE LIGHT COLORED GRAY SOILS OF THE SOUTHERN REGIONS’’

G’oyibnazarova Madina Ulug’bek qizi*

*for correspondence

ABSTRACT. Today, in the agricultural sector of our republic, including in the fields of protection and rational use of land resources, scientific and practical work has been systematically launched and certain results are being achieved. In this regard, research was conducted on the scale of our republic on the effects of industrial waste, man-made substances, chemical compounds called heavy metals on the soil and all types of vegetation on different soil types, and on the removal of petroleum products from the soil. developments have been developed, technologies for reducing and purifying the movement of heavy metals in the composition of irrigated soils have been created. At the same time, insufficient attention has been paid to the measures to reduce the environmental impact of various chemical compounds that are distributed in the atmosphere, suitable for the soil and climate conditions. The global and regional circulation of sulfur results from the fact that it is in the same group as O_2, H_2, C, N among the elements that form chemically active gases. We noted that the sulfur gases coming under the ground as a gas are absorbed into the underground water due to internal movement. In this process, a large part of sulfur is captured by microorganisms and takes place in a proper microbiological cycle. It is clear from this. Sulfuric gases moving towards the atmosphere encounter chemical and biological, biochemical filters.

KEY WORDS. Vegetation, terrain, plant, salinity, soil, growth, development, heavy metal.

INTRODUCTION. Sulfate as a reserve source of energy, controls the synthesis of sulfur-containing organic compounds (cystine and cysteine), accelerates

the nutrition process, and resists aging. The reduced form of sulfur is found mainly in proteins in the plant body. Sulfur plays a very important physiological role in the biological cycle of organic matter and especially proteins in the composition of plants belonging to the leguminous family, potatoes, corn, and especially in the formation of crops [1,5]. A large amount of sulfur is lost every year as a result of the leaching of sulfur from the soil and its removal with crops. Experiments have shown that plants cannot get enough sulfur from the atmosphere. Therefore, in recent years, in different regions of our country, more attention has been paid to determining its amount in the soil and searching for its simple forms for agriculture [3,4,7]. Sulfur and its compounds are added to the soil as a nutrient element for the purpose of amelioration (plastering) of soils, improving the physical properties of the soil, reducing the reaction of the soil solution, and accelerating the assimilation of iron, phosphorus and other nutrients contained in the soil. The main source of sulfur for plants is its various salts in the soil, sulfur compounds in the atmosphere, and sulfur-containing mineral fertilizers [1,8,9].

MATERIALS AND METHODS. 130 million to the surface of the earth every year. tons of sulfur compounds fall, including 0.5 million annually to the regions of the central part of Russia. it was determined that tons of sulfuric acid will be added. Most of the sulfur compounds are washed into the deep layers of the soil and precipitate the compounds of heavy metals - lead, cadmium, zinc, iron, and aluminum in the soil profile. It is absorbed through the roots of many plants and has a fatal effect on their growth and development [3,7,9]. According to the data, the SO4 form of sulfur in the driving layer of some soils ranges from 50 mg to 100 g/kg, but its average amount in the soil profile does not exceed 10 mg/kg [11,14]. The consumption of sulfur depends on the amount and nature of rainfall, the topography of the place, and the condition of the soil. Part of the sulfur contained in the soil is removed with the crop, and part of it enters the circulation through soil alkalization.

Sometimes this indicator averages 14.6 kg per hectare. it has been proven to reach up to Depending on the amount of water-insoluble sulfates, this number may change [3,11]. Levels and coefficients of chemical pollution of soils were adopted for various elements and compounds. When classifying the levels of chemical pollution of the soil, it is not determined the same for all types of chemical pollution, but it is determined separately according to the chemical composition of a specific pollutant, its amount in the soil, the accepted norm (QKM), the level of toxicity and other characteristics. soil pollution level (on a 5-point system) is weakly unpolluted, moderately strongly polluted, very strongly polluted. and the pollution coefficient is defined as 0 to 2.0 [11,15].

Sulfur pollution of the environment due to human activity is twice as much as natural pollution. The total amount of aerosol emissions into the atmosphere under the influence of anthropogenic factors is 60 mln. more than tons. Carbon, sulfur and nitrogen compounds make up 80-90% of emissions released in the gaseous state [11].

RESULTS AND DISCUSSION. The climate of the Kashkadarya region reflects all the features of a sharply continental, dry subtropical climate. The continental dry subtropical climate of the Karshi desert, located in the center of the Central Asian region, the northern part of the Turanian plain, has the following characteristics: the continuation of plant vegetation even in winter; in the summer season, clear (cloudless) days prevail and the average temperature fluctuates around 30 °C; a big difference in day and night temperatures and diurnal regime; Predominance of atmospheric precipitation in winter and spring, almost no precipitation in summer; It is a bright expression of a wet and warm spring and a very dry summer, which actively affects the flora and fauna and the process of soil formation.

Air temperature change

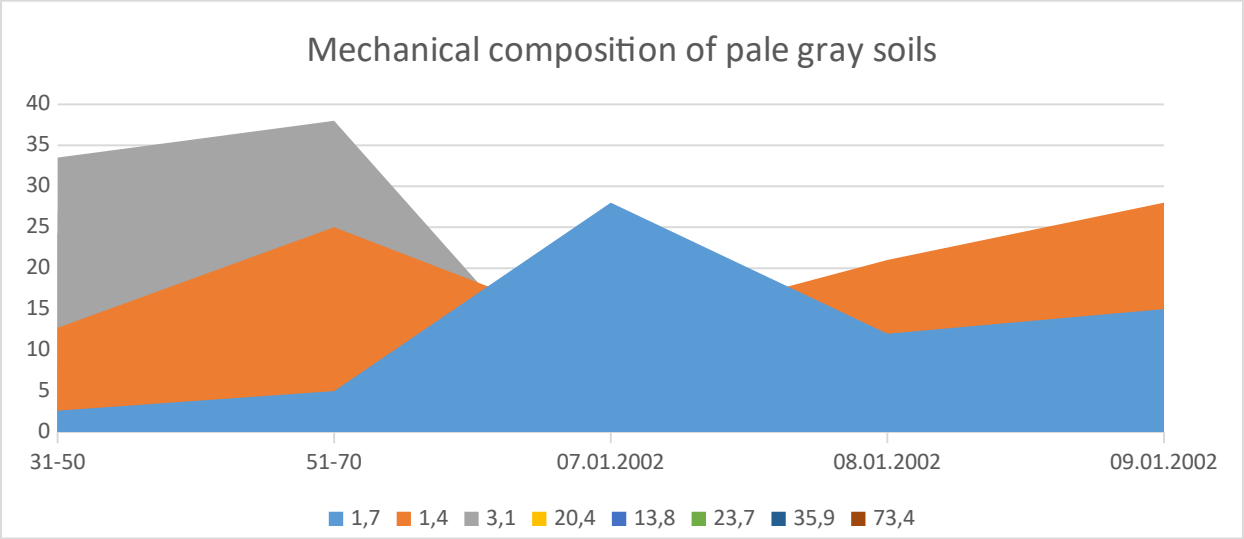
(Data from karshi weather station).

years	januar	febrayr	march	april	may	june	july	August	september	october	november	december	yearly average
1	2	3	4	5	6	7	8	9	10	11	12	13	**14**
		karshi											
2021	0,9	6,3	12,4	20,7	27,4	30,2	29,5	27,3	21,6	15,2	11,2	6.5	
2022	5,4	7,1	12,5	10,6	22,3	28,4	29,6	29,1	23,0	19,0	11,0	-0.6	
2023	**4,8**	**6,6**	**9,4**	**15,4**	**20,4**	**26,8**	**30,4**	**28,0**	**22,7**	**18,2**	**9,4**	**4.8**	

Studies on the vegetation cover of the desert region (zone) have shown that the relief and geomorphological structure of the place, as well as the climate, have a direct effect on the color and diversity of the flora. [11]. The natural flora of Kashkadarya region consists of about 1,200 species of higher plants, 106 of which are used as food and livestock feed, 138 are valuable medicinals, 26 are essential oils, 61 are honey-producing, 62 types are flavoring, 53 types are coloring, 19 types are saponinous plants. The vegetation of Kashkadarya region is mainly composed of ephemerals (annual plants with short-term vegetation), ephemeroids (perennial plants with short-term vegetation, but regenerating through the roots), xerophytes (resistant to long droughts desert plants), halophytes (salt-loving plants that grow in salt marshes and salt marshes) and psammophytes (plants that grow in sands). For the interior plains of the Karshi desert, ephemeral and ephemeroid plants - cherkaz, incense, white chitir, shrubs - yulgun, karasaksovul and other plants are typical. In addition, pashmak, shora, tereskan, dastarbosh are found in low salinity areas of the desert, and black shora, sarsazan, shorajriq, lizilymia and akbosh are found in highly saline areas.

CONCLUSION. While organic sulfur is the main part of sulfur compounds in the soil, sulfur oxide in the form of acid, which is the main component of the

composition of factory wastes, chemically reacts with bases in the soil to form various



toxic and non-toxic (useful) salts, neutralizing the soil solution, slowing down microbiological processes to a certain extent. 'secret shows. However, the strong buffering properties of soils do not allow the solution environment to deviate to the acidic side. It should be noted that in a relatively short period of time after irrigation, significant changes have occurred in the soil cover. Due to the semi-hydromorphic regime, the light-colored gray soils developing under automorphic conditions, i.e., the evolution of the soil cover, have shifted their evolution towards meadow-gray and gray-meadow soils. Changes in the process of soil formation, irrigation, of course, led to the emergence of a water regime characteristic of newly developing soils.

REFERENCES

1. Musayev B.S. Agroximiya. «Sharq» Nashriyot-Matbaa Aksiyadorlik kompaniyasi, bosh tahririyati. Toshkent -2001. 163-164 bet.
2. Abzalov A., Ergashev A., Xamrayev M. “Znacheniye seri v poluchenii ekologicheski chistogo produkta rasteniy” Orol dengizi havzasining sahrolanish jarayonida tuproq unumdorligini tiklash, oshirish va ular melioratsiyasining dolzarb muammolari ilmiy-amaliy anjuman ma’ruzalari to‘plami, Toshkent-2002. 240-242 bet.

3. Ostonaqulov T.E., Nurillayev I.X. SABZAVOT MAKKAJO‘XORI NAVLARINI ERTAGI VA TAKRORIY EKINLAR SIFATIDA TURLI MUDDATLARDA O‘STIRILGANDA HOSILDORLIGI // SAI. 2023. №Special Issue 6. URL: https://cyberleninka.ru/article/n/sabzavot-makkajo-xori-navlarini-ertagi-va-takroriy-ekinlar-sifatida-turli-muddatlarda-o-stirilganda-hosildorligi (дата обращения: 01.11.2023).
4. Gilis M.B., Ganja Y.Y. Sernoye pitaniye i produktivnost rasteniy. Kiyev, «Nauka - Dumka», 1983. s.154-162.
5. Silkin L.Y. Vliyaniye SH i SS grupp na soleustoychivost rasteniy. Fiziologiya rasteniy. Tom 12, vip. 1, M., «Nauka», 1965. s. 117.
6. Snisarenko T.A. Adaptatsiya rasteniy raznix ekologicheskix grupp k razlichnoy stepeni vlajnosti pochvi v protsessax fotosinteza i dixaniya. http: // WWW. Vestnik. Stavsu. ru. Вестник, 2006. № 47, c. 159-161.
7. Пейве Я.В. Биохимические особенности серы. В. КН.: Биохимия почв. М., сельхозгиз. 1976. с. 307-311.
8. Церлинг В.В. , Ерофеев А.А. Динамика поступления серы и вынос ее разными культурами в зависимости от уровня обеспеченности серой. Ж. «Агрохимия», 1974. № 3, с. 79-86.
9. www.nauka-shop.com/mod/shop/product\D2726/-114k
10. Овчинников Ю.А.Биоорганическая химия.Изд-во.”Просвещение”М. 1987. с. 153-156.
11. Nurillayev , I. X. o‘g‘li. (2023). BODRINGNI VEGITATIV YO‘L BILAN PAYVANDLASH TEXNOLOGIYASINING AFZALLIKLARI. *GOLDEN BRAIN*, *1*(27), 110–114. Retrieved from
12. https://researchedu.org/index.php/goldenbrain/article/view/4929

13. Гулимов С. Содержание серы в некоторых орошаемых почвах и ее значение как элементов питания для хлопчатника. Автореферат дисс. на соиск. учен. степ. канд.с.-х.наук, Ташкент, 1980. с.3,10,13.
14. Mayer B., Pritzel J., Kroyse H.R., Rehfuess K.E., Fritz P.Transformation of simylated wet sulfat deposition in forest soils assesed by a core experiment using sulfur isotopes // Water, Air and Soil pollut. – 1995. - №1/ - P. 243-260.
15. https://www.plantarium.ru/page/viyew/item/39274.html
16. https://uses.plantnet-project.org/en/Triticum_aestivum_(PROTA)