Soil Environment of Romitan District Which Located in Bukhara Region and Its Role in Plant Life

Artikova Hafiza To'ymurodovna — Bukhara State University, Bukhara, Uzbekistan,

Usmonova Gulshod Ibrohimovna — Bukhara State University, Bukhara, Uzbekistan, usmonovagulshod@gmail.com

G'oziyeva Gulandom Aduvohidovna — Bukhara State University, Bukhara, Uzbekistan

ABSTRACT

The article provides information on the soil environment of Romitan district, the factors influencing it and impact of the environment on the growth and development of plants

Keywords: Soil environment, alkaine, acidic, soil fertility, soil composition, carbonates, sulfates, microorganisms, biochemical process

One of the most important indicators of soil condition in the cultivation of crops in agriculture is its environment. In soils of different types and levels of soil solution, the acidity and alkalinity vary within very wide limits. It has its own environment, which is optimal for different agricultural crops. Often, agricultural plants thrive in a neutral environment. During the growth and development of plants, their demands on the soil environment vary. The acidic environment can be most harmful in the first period of plants and harmful or completely harmless in later periods. The acidic environment worsens the nutrient regime of the soil. The most favorable reaction for the absorption of potassium and sulfur by plants is pH -7.0-8.5, iron and manganese - 5-7, molybdenum - 7.0-8.5, phosphorus - 6.2-7.0.

Soil acidity is one of the main properties of the soil due to the presence of hydrogen ions in the soil solution, as well as the exchange of hydrogen and aluminum ions in the soil absorption complex. Soil acidity plays an important role in plant life, in the life of soil microflora, in the transfer of substances from one state to another, and in the migration and accumulation of substances. When the pH is equal to 7, the reaction of the soil solution is called neutral, below that it is acidic, and above that it is called alkaline. The reaction of the soil solution was found to be different pH-3.5-9 and higher in different soils. Black soils are close to neutral, while red soils have a weakly alkaline reaction, and saline soils, especially soda, have a strong alkaline reaction. High acidity adversely affects the growth and development of many crops and microorganisms.

Expeditions were conducted to study the soils of Romitan district of Bukhara region. The studies included cuttings from irrigated meadow alluvial soils with different plant cover,

soil composition, and fertility in the district. In these sections, soil samples were taken in separate layers. Chemical analysis was performed on soil samples. was measured by the negative logarithm. Depending on the composition of solutes in the soil solution and the interaction with the solid part of the soil, the amount of H + and OH- in the solution, the ratio, ie the pH changesIn the irrigated lands of Romitan district of Bukhara region, the pH measured in the aquifer was mainly around 8.2-9. It was also observed that these values differ in different soil horizons

cut	Depth sm	Ph	Environment
1	0 – 17	8,7	Alkaline
	17 -52	9,1	Alkaline
	52 – 82	9,2	Alkaline
	82 – 112	8,9	Alkaline
	112 – 144	9	Alkaline
2	0 – 12	9,8	Alkaline
	13 – 57	8,6	Alkaline
	57-78	8,6	Alkaline
	78 – 104	8,7	Alkaline
	104 164	8,8	Alkaline

Due to the richness of the carbonates in the soil, it was found that they had a weak alkaline reaction, and their amount was studied.

cut	Depth sm	Alkaline	
		general	general
		HCO 3 %	HCO 3 M. E
1	0 -17	0,028	0,46
	17-52	0,032	0,52
	52-82	0,027	0,44
	82-112	0,027	0,44
	112-144	0,026	0,42
2	0 – 12	0,037	0,60
	13-57	0,026	0,42
	57-78	0,023	0,38
	78-104	0,024	0,40
	104-164	0,028	0,46

The soil reaction depends on a combination of factors. These factors include the chemical and mineralogical composition of the solid part of the soil, the amount and quality of free salts in the soil, the amount and quality of organic matter, the composition of soil air, soil moisture, the activity of soil organisms, and more. One of the important factors governing the soil environment is the salts in it. Neutral, acidic and alkaline salts in the soil affect the soil reaction when dissolved and dried in water, and this effect is reflected in fertility. The most common of the mineral acids in the soil is carbonic acid. Depending on the thermodynamic conditions in the soil, the pH of the carbonic acid soil solution is 3.9-4; It can hold in the range of 5-5.7. At the same time, the self-regulation of carbon dioxide depends on the daily changes in the weather in the soil and the activity of microorganisms. In addition, the oxidation of sulfides in soils can temporarily or permanently produce sulfuric acid, which can lower the pH of the H2SO4 in the soil to 2-3

Unsaturated humic and fulvic acids in the soil also have the ability to lower the pH to 3-3.5. It has been proven that vinegar, shavel, citric and other acids are freely formed in the soil solution due to the release of substances around the roots by organisms. The role of microorganisms in determining the environment in the soil solution is great. For example, a nitrofixator temporarily forms nitric and nitric acids in the soil, resulting in a temporary drop in pH = 0.5-2.0. H2SO4 is released into the soil solution due to the breakdown of proteins by microorganisms, which leads to a decrease in pH,

In short, one of the most important indicators of soil condition in the cultivation of crops in agriculture is its environment. The environment of the soil solution varies in soils of different types and levels. It has an optimum pH for a variety of agricultural crops and thrives well in this environment. Most agricultural plants grow well in neutral environments, and acidic environments have a devastating effect on them. Examination of Uzbek soils has shown that they are alkaline due to their richness in carbonates. The required biochemical processes also slow down or do not go at all when the environment changes. This reduces the supply of plants with elements such as nitrogen, phosphorus, sulfur. The intensity of plant assimilation of minerals, organic and inorganic substances in the soil has also been found to depend on the soil environment.

References

1. To'ymurodovna, Artikova Hafiza, and Usmonova Gulshod Ibrohimovna. "SOIL COMPOSITION AND ITS EFFECTS ON FERTILITY IN ROMITAN DISTRICT." *Web of Scientist: International Scientific Research Journal* 3.1 (2022): 701-704.
2. Usmonova G. I., Ochilova G. A. TUPROQNING BIOLOGIK FAOLLIGIDA MIKROORGANIZMLAR ROLI //Academic research in educational sciences. – 2022. – Т. 3. – №. 1. – С. 63-67.
3. Usmonova G. I., Xo'Janiyozova B. X., Ochilova G. A. TUPROQNING BIOLOGIK FAOLLIGIDA MIKROORGANIZMLAR ROLI AZOTOBAKTERNING XUSUSIYATLARI //Academic research in educational sciences. – 2021. – Т. 2. – №. 6. – С. 139-143.
4. Амонова Д. Б. ҚИЗИЛ НУРЛАНИШ, УЗУН ҚИЗИЛ НУРЛАНИШНИНГ ФИТОГАРМОНЛАР БЎЙИЧА ФИЗИОЛОГИК ТЕСТЛАРДА ТАЬСИРИНИ ЎРГАНИШ //Scientific progress. – 2020. – Т. 1. – №. 2. – С. 33-39.
5. Amonova D. Комбинированное действие красного излучения, низкочастотного электромагнитного поля и фитогормонов на растения //ЦЕНТР НАУЧНЫХ ПУБЛИКАЦИЙ (buxdu. uz). – 2020. – Т. 2. – №. 2.