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Distribution of the forms of reserves of humus in typical seroms formed in geomorphological areas Tashkent-Keles

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Abstract. The article presents the effect of humic substances on the physical, water-physical, and chemical properties of the soil, as well as the release of various forms of humus reserves (total, potential, near, direct). Each form of reserves of humus formed organic substances and their different differences in the composition of humus the soils of the serozom belt of healed, newly irrigated, and old irrigated soils, accumulation of humus content and distribution in the layers of the section profile, changes in the forms of humus reserves in the genetic horizons of the soil. In a typical irrigated sierozem, the content of potential reserves of humus and in the same row the proximal, direct forms of reserve increases. In the soil profile at a depth of 0-120 cm, the potential reserve of humus ranges from 42,88 % to 29,60 %, the closest one is from 49,32 % to 57,20 %, the immediate reserve from 7,80 % to 13,00 %. These figures show that over the years, the use of soil for irrigated agriculture, the degree of their cultivation and the amount of watering aggregates increased.

1. Introduction

In 1963, the process of soil formation was founded by the Russian scientist V.V. Dokuchaev. He found the factors of soil formation. Considering the topography, flora and fauna, the maternal sex of the soil, the age of the soil, it is important to remember that flora and fauna are important indicators of soil formation and productivity. Humus is the main source of formation and increase of soil fertility. As a result, soil humus is formed under the influence of physicochemical and chemical and microbiological processes. Given that soil humus is an important factor in fertility, studies have been conducted to determine its formation and how it manifests itself. Plant and animal residues have a positive effect on the properties and fertility of organic substances in the soil.

The positive effect of organic matter on soil properties and productivity is of great importance for the formation of humic water-resistant aggregate structures. They improve water, air, biological, physical, water-physical soil conditions and provide erosion resistance. Scientists of the Commonwealth of Independent States Alexander L.N. [1], Antipov-Karataev [2], Shein EP, Milanovsky E.Yu. [3], Batudaev A.P. [4], Tyurin I.V. [5], Grishina L.A. [6], Rusanov A.N. [7], Agisheva S.Yu. [8], Evseeva N.V. [9], Mamontov V.G., Gladkov A.A. Kuzelev M.M. [10, 11], Ponomareva V.V., Plotnikova T.A. [12,13], Kuznetsov R.V. [14], Sakbaeva Z.I. [fifteen] The elemental and chemical composition of organic matter Numerous scientific papers have been published about their oxidation levels and their role in productivity. Scientists from Uzbekistan Arslonov I.N., Ryzhov S.N., Toshkuziev M.M. [16.17], Ziyamukhamedov I.A. [18], Akhatov A., D. Murodova., D. Makhkamova., Akhatova L.A. [19,20,21], Shadieva N.I. [22], Kuziev Yu.M. [23],



Sherimbetov V.Kh. [24], Ramazanov A., Akhatov A., Fayzullaeva M. [25] Humus and humic and fulvic acids contained in soils, as well as the amount of soil in various mechanical particles. In their work, it was reported that they spread in the soil layer, increase in size from large particles to smaller ones and accumulate in the iliac particles. Among the countries of Central Asia, especially in Uzbekistan [21], the author first identified soil colloids (<0.0001 mm), determined the amount of humus in them and indicated the maximum amount of humus in colloidal particles. Given the high role of humus and its high molecular weight acids in the formation of soil and fertility properties, NI Gorbunov [25] used some nutrients (K, P, Ca, Na) in the soil to maintain the plant's ability to absorb plants. depending on the sequence in which the elements are divided into general, potential, pancake (near), Blidzhashian (closer), immediate (labile) form.

In this regard, for the first time Akhatov A., Muradova D. and Akhatova L. [20] partially described in their scientific studies the first step in the allocation of humus to the reserve. The author continued his research to cover this issue in more detail.

2. Materials and methods

Separation of soil particles from soil N. I. Gorbunov [26], determination of the humus content according to I. V. Tyurin [5], composition of the humus group of V. V. Ponomoryov and T. A. Plotnikov [13] humus storage methods calculated according to the author methodology. For this, it is necessary to determine the amount of humus in the soil, the composition of the humus group of soil particles, as well as the amount of humus in the ileal particles and the hydrolyzed and non-hydrolysing part of humus, the amount of some water-soluble humic acids, i.e. lipid states.

3. Results and discussion

From the literature and published articles of Uzbek and foreign scientists, it is well known that the content of humus in soils decreases or the soil remains unchanged. there have not been many studies of humus fluctuations in the past, and the conditions for this have only been created.



Figure 1. Humus storage layer at the top of the soil section

It is necessary to pay attention to the study of various types of reserves as a substance that improves soil properties (control of water, air, biological, physical, water-physical procedures) and water-resistant aggregates, as well as increasing water resistance and productivity 'figure 1' The process of increasing or decreasing the amount of humus in the soil depends on the accumulation or leaching of any stock and intake of irrigation water. In this regard, humus was divided into the following conservation forms:

1. The total amount of humus, determined by the method of IV. Turin - general reserve;

2. The main part of the humus content is a potential reserve;
3. Humus paired with the same particle - a close reserve;
4. Water-soluble humus - direct (labile) reserve.

Explains what forms of humus-containing substances are included in these allocated reserves. Common humus reserves include lignin, cellulose, glucose, chelates, quinones, proteins, high molecular weight organic acids, organic salts. Potential (hidden) reserves of humus are lignin, cellulose, glutamate, chelates, proteins and proteins. The closest humus reserves are partial proteins, highly insoluble molecules, organo-mineral, and trivalent organic salts. Direct reserves are water-soluble high molecular weight (humic and fulvic acids) and organic salts and organic salts that are readily soluble in an alkaline environment. We decided to apply the aforementioned humic substances to the French scientist Duchofour (1965), the terms module and myulus, in the form of humus. The total and potential reserves of humus can be called moderate humus, i.e. coarse humus, and the types of near and direct reserves are called humus, that is, small humus, since small humus accumulates in small mechanical particles and partially dissolves in water. Thin humus is involved in coating small mechanical particles, coating the surface of the aggregate with a thin film and the formation of waterproof aggregates, while coarse humus is located in the spaces between the aggregates. The study of the association of humus with the mineral part of the soil and their form determines the direction of soil formation and the process of fertility formation. The stock of humus in the soil, especially its proximity and direct forms, is considered a factor in the formation of aggregates, and potential reserves are the main resource of their formation.

Table 1. Humus content in soils and their distribution by type of reserve

The name of soil	Layers, depth, sm	Humus %	Particle Size II „	Silt particles the amount of humus, %	Carbon%		Reserve form of humus mg / 100g				Of the total amount of humus, %		
					Not hydrolyzed	hydrolyzed	total	potential	close	direct	potential	close	direct
Typical cliffs	0-12	1,73	19,0	4,22	61,2	38,80	1730	844	802	84	48,55	46,36	4,86
	12-23	0,76	21,1	1,85	70,2	29,80	760	311	390	59	40,92	51,32	7,76
	23-46	0,60	18,0	1,44	71,7	28,30	600	276	259	65	46,00	43,17	10,83
	70-90	0,35	15,6	1,17	72,7	27,30	350	67	183	100	19,14	52,29	28,57
	135-165	0,28	14,2	0,90	74,4	25,60	280	82	128	70	29,28	45,71	25,00
Newly irrigated typical grey	0-28	0,90	15,0	2,23	67,5	32,50	900	497	335	68	55,22	37,22	7,55
	28-38	0,56	15,9	1,52	67,2	32,80	560	243	242	75	43,39	43,21	13,39
	38-71	0,42	14,9	1,31	68,6	31,40	420	159	195	66	37,85	46,43	15,71
	90-100	0,32	14,4	1,11	68,9	31,10	320	98	160	62	30,62	50,00	19,38
Ancient irrigated typical grey	145-165	0,28	12,2	0,97	70,4	29,60	280	96	118	66	34,28	42,14	23,57
	0-27	1,32	23,6	2,76	63,5	36,50	1320	566	651	103	42,88	49,32	7,80
	27-43	0,96	21,3	2,37	62,6	37,40	960	384	505	71	40,00	52,60	7,40
	43-83	0,71	26,6	1,93	62,6	37,40	710	144	513	53	20,28	72,25	7,46
	100-120	0,50	22,0	1,30	61,7	38,30	500	148	286	66	29,60	57,20	13,0
	170-190	0,35	21,7	1,02	60,9	39,10	350	65	221	64	18,57	63,14	18,28

Table 1 shows that the humus content in protected and recently irrigated soils in the boggy region is low. The humus content in typical sandy loamy soils is 1.73%, with a sharp decrease towards the lower part of the shear and a gradual decrease in size compared to natural rocks (picture 2). In typical freshwater soils, the humus content decreases by about 1.5-2 times lower than in arable soils, the main reason for which is the impact of plowing, irrigation and harvesting.



Figure 2. The appearance of soil incision

The table shows that the humus content in typical old irrigated soils increases significantly in the sedimentary layers and in the lower layers compared with recently irrigated typical white soils .. Consequently, the effect of irrigation on the humus content in relation to recently irrigated soil is restored from ancient irrigated soils. The distribution of humus reserves in typical gray soils of the study was estimated at 100 g per milligram of soil in the intersoil and cross sections. In the potential (hidden) reserve, the main part of the humus content, there was a tendency to lower speeds from the upper layer to the lower natural stone. The potential supply of humus in these soils ranges from 844 to 65 mg / 100 g. n typical marsh soils, the potential humus reserve is maximum in sandy loam, and in the sublayer it has decreased by 2 times, followed by a gradual decrease in genetic material. The potential reserves of humus in freshly irrigated moist soils are significantly reduced compared with the reserves of humus and ancient irrigated soils, as shown in the table below. This means that the culture level of the newly irrigated soil is still quite low, since the proximity and direct forms of humus for cultivating the soil are not well formed. (convergence at 335 mg / 100 g, direct forms at 68 mg / 100 g). In a typical desert soil that has been irrigated since ancient times, the potential reserves of humus along with its proximity and direct reserves increase. The potential supply of humus at a depth of 0-120 cm in the notched layer is from 42,88% to 29,60% proximity – from 49,32% .to 57,20% direct reserve type from 7,80% till 13,00% of vibration.

These numbers show that the longer the soil is used for irrigated agriculture, the higher the level of soil culture will be, and the better its structure and the more water-resistant aggregation. These, in turn, are key factors in controlling soil fertility, water, air, and thermal conditions. Reserves are expressed as a percentage of total soil humus. The potential reserves of humus in observed typical wild soils are significantly reduced compared to typical sandy soils that are irrigated with recently irrigated typical gray soils. This is the only exception to the typical turf soil cover of the reserve.

The proximity and the immediate type of humus reserves are distributed over the soil layers, especially when the shape of the proximity reserve increases in the lower sedimentary layers, despite the total humus supply, from the ancient humus reserve in the lower genetic layers to the potential humus reserve. rotation conditions. Therefore, the study of humus in the soil can be explained by a detailed analysis of the humus reserves while explaining the decrease or increase in the humus content in the soil. Backing up the form of humus monitoring, tracking and analysis of soil, humus, which is growing to achieve clear and detailed data about the inevitable. In general, the surface of the studied soils accumulates in the form of a potential reserve, which decreases with the lower layers. On the contrary, the closest reserve accumulates in the lower layers. This is due to the fact that particles in the soil move from top to bottom. Direct (labile) spare parts also depend on the level of irrigation, leaching and soil culture. Therefore, we can say that the total humus content in moist and arid soils is associated with a decrease in the total humus content in the soil. The norm of water during irrigation

must be strictly observed, otherwise humus can be washed away from the surface layer of the soil, which will lead to a decrease in the humus content by 50%.

4. Conclusion

Given the current soil and climatic conditions, the amount of humus in the soil was determined, its group composition and the amount of humus in soil particles, as well as the hydrolyzed and non-hydrolyzing part of humus, as well as the amount of water-soluble humic acids, i.e. lipids. In case of humus release, reserve forms. Along with the potential reserves of a typical humid soil humus, its proximity and direct supply form increase. It was found that potential reserves of humus at a depth of 0-120 cm of the notch layer are from 42,88% to 29,60% , proximity is from 49,32% to 57,20%, and the shape of the direct reserve is from 7,80% to 13,00%.

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