

DETERMINATION OF HUMUS AND CARBONATES IN THE SOIL

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Abstract:

In this study, the amount of humus and carbonates in the soil was studied in laboratory conditions. I.V. Tyurin determined the amount of humus in the soils of the Almazar district of Tashkent city, and the amount of carbonates was determined by volumetric methods.

Keywords: *Humus, carbonates, typical gray soils, irrigated gray soils, irrigated gray meadow soils.*

Introduction

The humus is an organic part of the soil. The humus consists of humic acids, fulvic acids and their salts and also complex connections in a mineral part of the soil. Organic substance of the soil, in addition to the humus, includes the undigested and partially decayed vegetable and animal remains, organisms of microorganisms, decay products of the vegetable remains and others. However, up to 90% of all organic matter in the soil is humus. Soil fertility depends on the quantity and quality of humus. The amount of humus is determined in two ways: dry combustion of humus and wet combustion under the influence of acid. Dry combustion consists of heating the soil and determining the amount of carbon dioxide released during combustion. Wet acid burning is based on the oxidation of soil humus with chromic acid. Therefore, this method is more widely used in practice and allows you to determine the amount of humus and carbonate by weight and volume [1-3].

The volume method known as I.V. Tyurin's method is widely used. This method is suitable for determination of quantity of a humus in many types of soils. The wetlands containing iron oxides are an exception. I.V. Tyurin's method is a simple, simple and thematic method; the volumetric method was used to determine the amount of carbonate in the soils of the Almazar region. Using these methods, the content of humus and carbonates in the soils of the Almazar district of Tashkent was determined [1,4].

The amount of humus in the soddy layer of typical gray soils formed in the deposits of natural clay in this area is 1.38%, and in some places its content decreases by 1.12% as a result of leaching of the surface layer. Humus also decreases in the lower layers of the cut due to a decrease in the number of plant roots and living things. The amount of humus in irrigated gray and gray pasture soils is 1.29-1.67% (Table 1, Figure 1).

Table 2. Agrochemical composition of soils in Almazor district of Tashkent city

Kema, №	Depth, cm	Humus, %	CO ₂ carbonates, %	Kema, №	Depth, cm	Humus, %	CO ₂ carbonates, %
Typical gray soils				Typical gray soils			
1.	0-6	1.12	7.9	2.	0-5	1.38	6.8
	6-15	1.09	8.2		5-24	1.29	7.2
	15-34	0.84	8.3		24-60	1.00	7.4
	34-79	0.68	8.6		60-95	0.65	7.6
	79-146	0.31	8.9		95-130	0.42	8.0
Irrigated gray soils				Irrigated gray soils			
3.	0-20	1.29	6.7	4.	0-30	1.67	6.6
	20-55	1.03	7.8		30-65	1.28	7.0
	55-92	0.74	7.6		65-110	0.82	7.2
	92-134	0.37	8.1		110-150	0.53	7.6

There is an accumulation of carbonates in the lower layers, washed away from the upper layer of the section, at a level of 7–10% in natural typical gray soils and 7–8% in irrigated meadow soils (Table 1. Fig. 1).

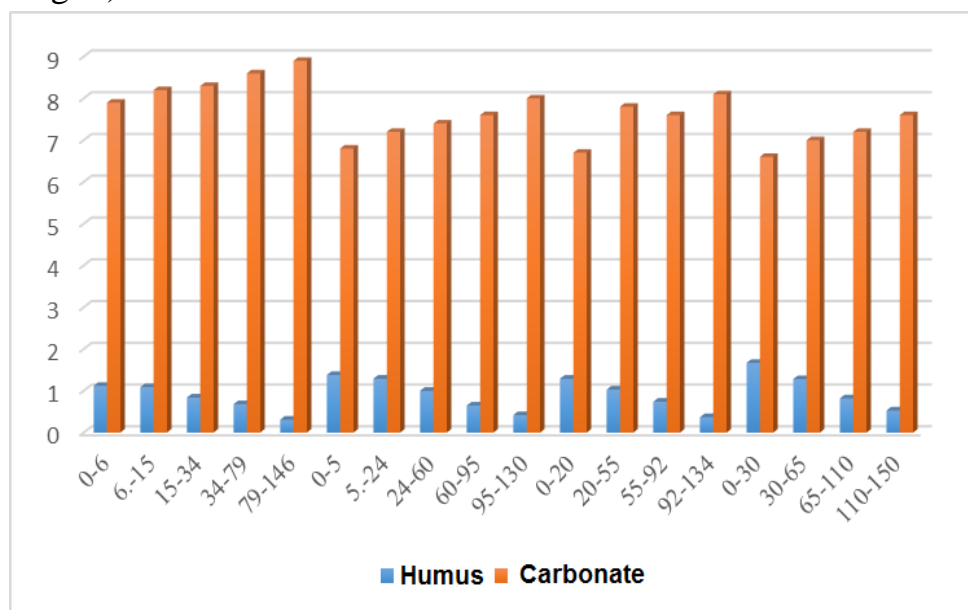


Fig 1. Agrochemical composition of various soils.

Research on the territory of the Almazar region in the gardens of administrative buildings of the faculties of biology, chemistry, physics, mathematics, economics, geology, geography, philology of the National University of Uzbekistan and in areas of irrigated gray soils. folded in layers. The amount of humus in the irrigated gray sediments of the experimental site of the National University of Uzbekistan is 1.22% in the upper soil layer (Table 2, Figures 2.3).

Table 2. The amount of humus and carbonates in the soils of the Almazar district of Tashkent city, %

Kema, №	Depth, cm	Humus	Carbonates	Kema, №	Depth, cm	Humus	Carbonates
1	2	3	4	1	2	3	4
Irrigated gray soils							
1	0-20	1.34	7.59	14	0-20	2.05	6.51
2	0-20	1.10	6.27	15	0-20	1.66	7.22
3	0-20	1.31	9.20	16	0-20	1.69	6.51
4	0-20	1.21	9.62	17	0-20	1.86	5.90
5	0-20	2.69	7.82	18a	0-20	2.70	6.78
6	0-20	2.65	7.22	18	0-20	2.10	6.86
7	0-20	3.14	7.13	19a	0-20	1.77	7.60
8	0-20	1.68	7.22	19	0-20	5.69	6.16
9	0-20	1.22	6.25	20	0-20	2.53	7.22
10	20-32	0.86	5.72	21	0-20	3.64	9.50
11	32-62	0.51	5.98	22	0-20	1.94	7.30
12	62-94	0.44	5.28				
13	94-150	0.37	6.25				

It was noted that the amount of humus increased by 3.64-5.69% in the bowels of the lands allocated for the Faculty of Chemistry and Economics (Figure 2). It was found that the amount of carbonates in the landscape lands of the National University is 6.27-9.50% (Fig. 3). The varying levels of humus in the surveyed soils are related to the amount and quality of humus used to improve vegetation and soil transferred to irrigated land.

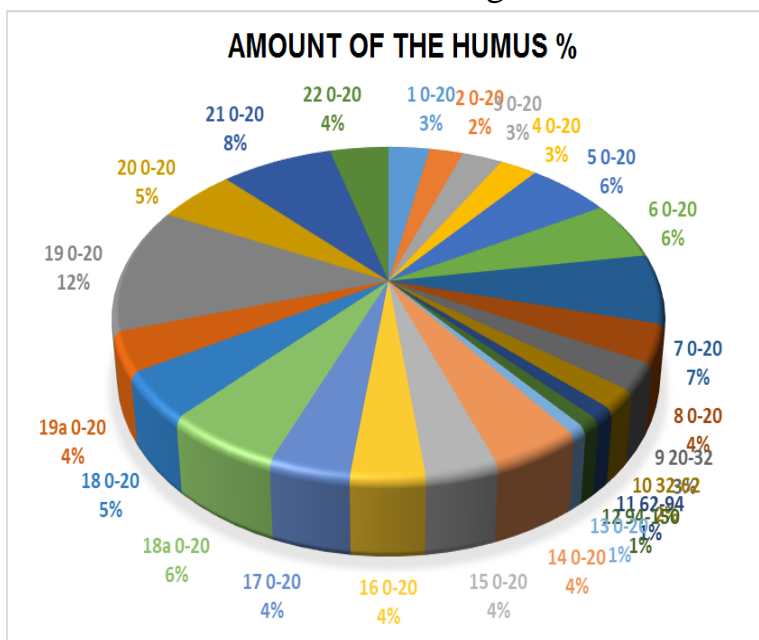


Figure 2. Amount of humus in irrigated gray soils

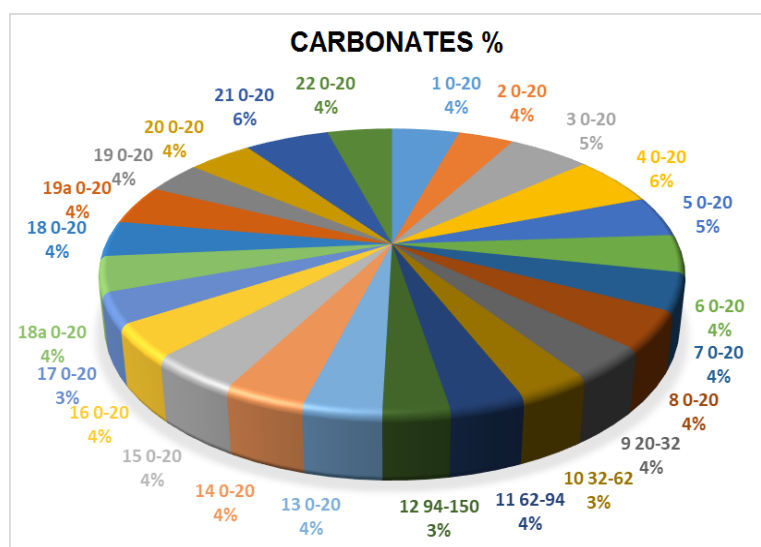


Figure 3 The amount of carbonates in irrigated gray soils

Conclusion

Thus, the morphological structure of the physicochemical properties of the soils of the Almazar region was studied, and it was found that there are irrigated gray, gray meadow and meadow soils on this territory. It has been established that the composition of the region's soils is organically associated with humus and carbonates, as well as with nitrogen, phosphorus and potassium.

References:

1. Arinushkina Ye.V. rukovodstvo po ximicheskomu analizu pochv[Soil Chemical Analysis Guide] // M.: MGU, 1970. – 488 s.
2. Xoliqov Sh, Uzoqov P, Boboxo‘jaev I. Pochvovedenie[Soil science] // Toshkent, 2011.
3. Boboxo‘jaev I., Uzoqov P. Sostav, svoystva i analiz pochvy[Soil composition, properties and analysis] // Toshkent “Mexnat” 1990.
4. Nomozov X.Q., Turdimetov Sh.M. Pochvy Uzbekistana i ix evolyusiya[Soils of Uzbekistan and their evolution] // T.: “Fan va texnologiya”, 2016.