

Amount Of Damage Due To Landfill In The Area Near The Construction (The example of Ar Zaisan area of Bogd Khan mountain)

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Abstract- Cuts were made in the soil of the area to determine the negative impact on the soil cover caused by the construction on 10 hectares of the Ar Zaisan area of Bogdhan Mountain and to estimate the amount of damage to the soil. Soil physics and chemistry feature quality specific year focus by indicator Areas of the same typology that have been fenced for more than 10 years [7] soil feature quality in comparison study wax. According to the research results, the content of humus in the soil of the area decreased by 2.3%, the content of mobile phosphorus and potassium as nutrient elements decreased by 61.1-83.3%, the content of physical clay decreased by 78.8%, the salt content decreased by 1.55%, the volume weight or density increased by 18.1% and sand content increased by 65.5%. Based on this, it is reasonable to believe that the properties of the soil in the built-up area have deteriorated significantly.

Index Terms- Soil degradation, soil physics, chemical properties, juniper stock, soil quality assessment

I. INTRODUCTION

Environment when human act operation with adverse effects a person mouth dense settled in central areas natural Native appearance the situation is great a lot lost are [4, 7]. Especially in recent years, soil degradation caused by intensive construction activities and recreation, tourism and land use planning has been strongly observed in specially protected areas [7]. Therefore, it is necessary to realistically plan measures for the restoration and protection of these areas, and to implement optimal land use management.

The removal work river purpose is to determine the amount of damage caused to the soil cover by construction activities. Above the purpose implementation for the following objectives proposed

It includes :

1. Determining changes in soil properties in the study area

2. Determining the degree of soil damage in the study area, calculating the ecological and economic evaluation of damaged soil, and determining the amount of damage

II. RESEARCH ELABORATIONS

Research object . Ulaanbaatar City, Khan-Uul District, District 11 territory, or 10 ha area where the construction of the Ar Zaisan are of Bogd Khan Mountain took place.

Determination of morphological characteristics of soil:

The morphology of the soil was determined by cutting the soil. When making a cut in the soil, 70-80 cm wide and 1.0-1.5 meters long, with an average depth of 60-150 cm, samples were taken from the 0-8 and 10-16 cm layers of the soil in 3 repetitions.

Soil chemical Indicators : Soil reaction environment Potentiometric method, Soil humus of Turing method, Mobile phosphorus and exchange potassium Machigin method help help defined.

Soil physics feature chan rear indicator : Soil mechanics composition-Kaczynski method, Soil ezl e son weight Cylinder, Soil hard of the section density Pycnometric method, Soil infiltration calculation method help help defined [1,2].

Soil ecology tissue government When assessing and calculating damages :

Soil ecology, tissue government assessment in 2010 Nature environment-travel tourism No. 156 of Minister by command approved below method science according to performed [3].

$$E_s = OR_s * K_p * K_g * K_s * S * H_e$$

(1.17)

E_s – ecological and economic assessment of soil,

OR_s – soil humus stock, kg/ha

K_p – coefficient of soil properties

K_g – coefficient of environmental parameters

K_s – coefficient of soil typology

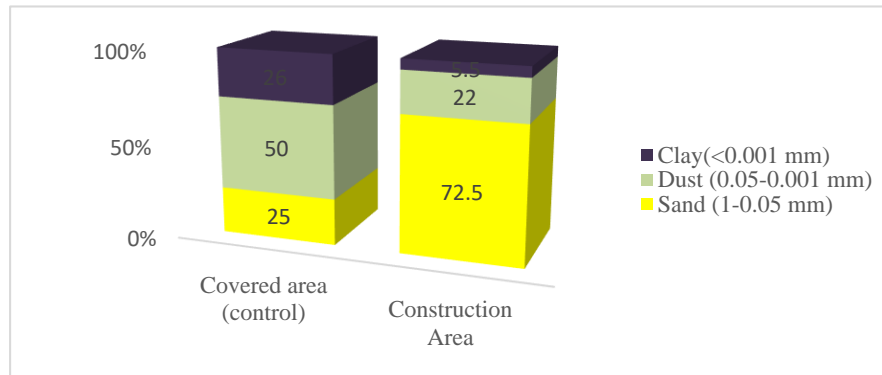
S – soil area, ha

He – 1.0 kg of humus material rating, tons/kg

III. RESULTS OF THE RESEARCH

We have compared the physical properties of the stabilized mountain brown soil in the study area with the characteristics of the control or fenced area and summarized them in the graph below by sand, dust and clay fractions (Graph 1).

Graphic 1. Soil of the study area mechanics composition comparison (0-8 cm)



Above from the chart to watch The sand content of the constructed area increased by 65.5 % compared to the fenced or control area, and the dust and clay content decreased by 56-78.8 %, respectively . From here to watch There is a reason to believe

that the soil of the built-up area is being absorbed and its nutrient quality is being lost.

Table 1. Soil chemical properties

Soil pattern feature	Sampled depth (cm)	pH , Salinity (%) _ Humus (%)			Phytonutrients (mg/100 g)	
					P ₂ O ₅	K ₂ O
Fenced area (Control)						
Mountain Brown	0-6	6.65 ±0.10	0.002 ±0.02	3.5±1.30	1.8±0.30	60±5.02
	6-21	6.60 ±0.03	0.002±0.02	2.5±0.45	1.5±0.22	15±6.23
Built-up area						
Mountain Brown	0-6	8.00±0.3	0.033±0.03	1.2±0.50	0.7±0.35	10±5.16
	6-28	7.48±0.16	0.034±0.03	0.4±0.30	0.8±0.30	8±9.03

According to the above results, the reaction environment in the 0-6 cm layer of the soil of the built-up area is weakly alkaline, the salt content is 0.031% higher than that of the fenced area, and humus It is lower by 2.3% in terms of content and 61.1-83.3 % in terms of nutrient elements, respectively. From here to watch There is a reason to believe that the soil in the construction area has been damaged by salinization and loss of nutrients.

Changes in soil properties in the study area

Based on the results of the above research, we have compared and summarized the changes in the soil properties of the studied area with the following key indicators (Table 2).

Table 2. Changes in physical and chemical properties of soil (0-8 cm)

Turf layer thickness, cm	pH	Salinity, %	Humus, %	Nutrients (mg/100 g)		Volumetric weight (g/cm ³)	Sand (1-0.05 mm)	Clay (<0.001 mm)	
				P ₂ O ₅	K ₂ O				
Fenced area (Control)									
13	6.6	0.002	3.5	1.8	60	1.1	25	26	
Built-up area									
3	8.0	0.033	1.2	0.7	10	1.33	72.5	5.5	
Difference (%)									
	- 76.9	+ 21.2	+1.55	-2.3	-61.1	- 83.3	+ 18.1	+ 65.5	-78.8

the results of the above comparison (with the control area). The soil reaction environment in the built-up area increased by 21.2% and became weakly alkaline, the thickness of the turf layer increased by 76.9%, the content of humus increased by 2.3%, the content of mobile phosphorus and potassium, which are nutrient elements, increased by 61.1-83.3%, and the physical clay content

decreased by 78.8%, salt content by 1.55%, volume weight or density by 18.1%, and sand content by 65.5%. It can be seen from this that the soil characteristics of the built-up area have deteriorated significantly.

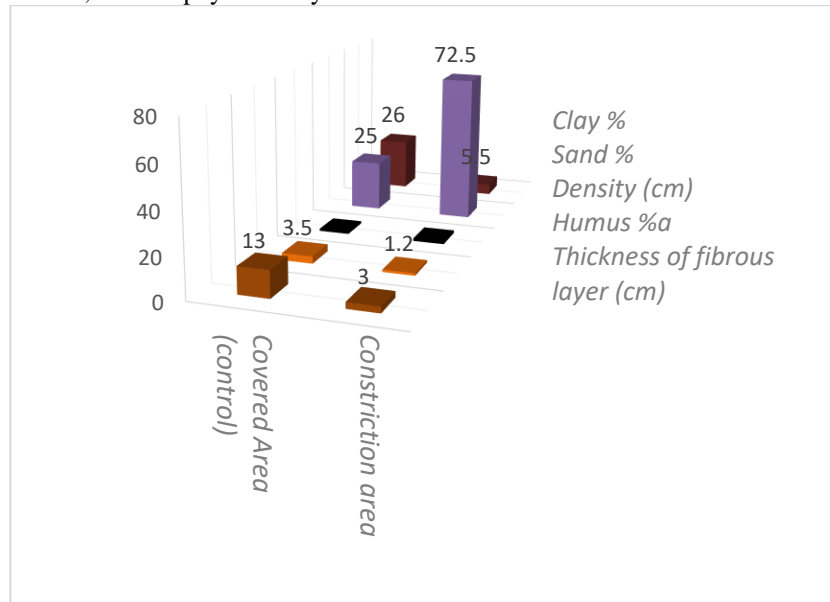


Chart 3. Soil of the study area feature quality change percent

According to the above results, the thickness of the peat layer, humus content, and physical clay content of the built-up area have decreased significantly, the sand content has increased by more than 50 percent, and the soil is more compacted.

Ecological-economic assessment of the soil cover of the research area and the estimated amount of damage

Table 3 . Soil humus stock of the study area

Soil typology	Soil layers	Thick, cm	humus, %	Volumetric weight, g/cm ³	Compost stock, tons/ha
Fenced area (Control)					
Mountain brown soil	A	18	3.5	1.1	69.3
	AB	30	2.5	1.1	82.5
	BC	30	1.5	1.1	49.5
	Total humus stock of 1 ha of soil				
Built-up area					
Mountain brown soil	A	10	1.2	1.3	15.6
	A B	17	0.4	1.3	8.84
	BC	30	0.1	1.3	3.9
	Total humus stock of 1 ha of soil				

According to the above results, the humus reserve of 1 ha of soil in the control area is 201.3 tons/ha, while that of the soil

near the construction area is 28.34 tons/ha. From this, the humus stock of the study area decreased by 85.9%.

Table 4. Degree of soil degradation in the study area

Specifications	Degree of soil disturbance (in points)					
	No damage	Less	Medium	Great	Strong	Very special
Reduction of compost stock, in %	<5	5-25	25-50	50-75	75-95	95<
	According to our calculations:				(85.9)	

According to the above results, which determine the degree of soil degradation, the humus stock of the area near the construction site has decreased by 85.9%, which is classified as severely degraded by the degree of soil degradation.

Table 5. Loss of humus resources of damaged soil (without correction factor)

Soil typology	Degree of damage	Damaged area, ha	Humus reserves of undisturbed soil, tn/ha	Humus reserves of degraded soil, tn/ha	Loss of soil humus resources, tn/ha	Loss of total humus stock, tn/ha
Mountain dark brown	Strong	10	201.3	28.34	172.96	1,729.6

Table 6 . Loss of humus resources of disturbed soil (with correction factor)

Soil typology	Degree of damage	Loss of total humus resources, tn	K. of correction of parameters of soil characteristics	K. of correction of geographical indications	K. of revision of soil classification	Loss of total humus resources, tn (edited)
Mountain dark brown	Strong	1,729.6	1	0.7	0.7	847.504

Table 7. Amount of soil damage caused by construction

Soil typology	Degree of damage	Damaged area, ha	Loss of soil humus resources, tn/ha	Assessment, thousand	Soil assessment of 1.0 ha area, thousand
Mountain dark brown	Strong	10	847.504	233,911.104	23,391.1

According to the above results, if the loss of humus resources in the heavily eroded and damaged areas due to construction is calculated including the correction coefficients for soil properties and geographical parameters, the total loss of humus resources is 847,504 tons. If the amount of this resource is calculated at the exchange rate (2010) of 1.0 kg of humus substance (276 toke), the damage to the soil of the area is 233,911.104 thousand MNT .

IV. DISCUSSION

D. Dorzhgot (1986, 2003) and Mongolia country extent soil detailed research do soil mold feature help The characteristics of each are studied and according to the above researchers, humus in the 0-10 cm layer of mountain brown soil content 2.0 % , reaction environment weakly acidic or pH 6.5, powder dirt content or of pieces composition for loose sand and silt (<0.01 mm to occupy percentage 5 % , <0.001 mm to occupy percent 1 %) mechanics consists of is that defined be it Ours by research mountain brown soil of humus in the strata above content 1.2-3.0 % , reaction environment weakly alkaline to medium degree alkaline pH 7.3-8.8, powder dirt content or of pieces composition for sand and light loam mechanics consists of is _

D. Avaadorj (1990-2000) . researchers Mountains and steppes of Mongolia soil humus , humus generation thick , hummus resources established is _

Table 8. Soil of compost resources established seeds amount comparison

Soil mold feature	Soil period layer	Thick , cm	Humus , %	Volume weight , g/cm ³	Compost reserve , tons / ha
D. Avaadorj et al. (1990-2000)					
Mountain brown soil	A	18.5	2.2	1.3	52.9
	AB	14.2	1.5	1.3	27.6
	B	13.4	1.1	1.3	19.1
	1 ha soil of compost total resources				99.6
Ours by research					
Mountain brown soil	A	10	1.2	1.3	15.6
	AB	17	0.4	1.3	8.84
	B	30	0.1	1.3	3.9
	1 ha soil of compost total resources				28.34

V. CONCLUSIONS

According to the results of the changes in the soil characteristics of the research area, the thickness of the turf layer of the soil increased by 76.9%, the content of humus increased by 2.3%, the content of mobile phosphorus and potassium as nutrient elements increased by 61.1-83.3%, and the physical clay content increased by 78.8 % . decreased by 21.2%, the reaction environment of the soil increased by 21.2% and became slightly alkaline, the salt content increased by 1.55%, the volume weight or density increased by 18.1%, and the sand content increased by

65.5%. Based on this, it is reasonable to believe that the properties of the soil in the built-up area have deteriorated significantly.

The humus reserve of the research area has decreased by 85.9%, which is included in the level of severe soil damage, and the total loss of humus reserve is 847,504 tons (with the correction factor of soil characteristics and geographical parameters) . If the amount of this resource is calculated at the price of 1.0 kg of humus material (276 toke) (2010) , it is determined that the damage to the soil cover of the area is 233,911.104 thousand MNT .

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