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Research Article

Intensification of the Erosion Process in the South-East Mountain-Agriculture Land of Azerbaijan and Measures to Combat it

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Abstract

The steppe mountain –brown soils with grey -brown soils at 800-1200 m above sea level exposed to steppe process after the forest has been cut.

The typical, leached from substanees, ealcareous subtypes of the steppe mountain-brown soils consist of the followings; humus layer is thick, brown, stnructure is nutlike-granular, caleareous illuvial.

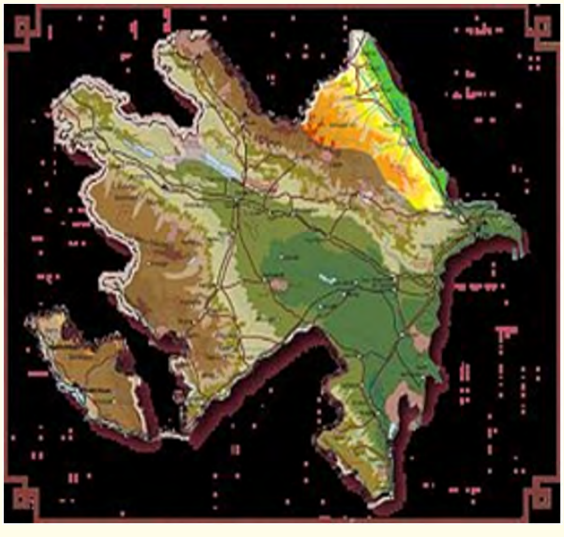
The surface of this stratum is fertile in humus.

The steppe mountain- brown soils considerably differ from the plain lands for their morpho-genetik structure, physical, chemical characters.

The forest cultures were perished in a historical period and the agricultural plants were planted in the areas under the forest in the region.

Keywords: Perennial Grass; Erasion Process; Leached; Relief; Ravine Erosion; Vegetables

Introduction



Figure

Dark brown soils are different from the mountainous lands with their morphogenetic properties. The relief conditions of the area covered with brown mountain-brown soils are favorable, and climatic features are good.

During the historic period, forested vegetation has been destroyed and agriculture has been planted in areas under the forest. It is possible to get good crops from these lands. Their morphological structure has changed somewhat since it uses dark brown soils during a long historical period.

Here the anthropogenic tension is constantly increasing, and it also accelerates the process of degradation.

The lands we have explored have been formed in complex physical-geographical conditions, including complex relief, and severe disintegration is observed in the area where it is spread.

In the area covered by these lands, the slopes are very sloping, where there are deep valleys and hawthorn networks where

vertical zones of the region change relatively rapidly, and the area of mountain forests declines considerably, and the aridity process is intensely manifested. As for the climate, the annual rainfall in the degraded brown soils is at 400-500 m.

Because of our investigation covers mountain-chernozem, we dwell on their main character: B.H. Aliyev, [3], Dokuchaev V.V. [4], Gerasimov I.P. [5,6], (Mustafaev Kh.M. Alakbarov K.A.) [8], and others have noted on spreading of chernozem in mountain zone of Azerbaijan [1,2,7].

Chernozems have spread in limited area in Great Caucasian and are strongly used under agriculture plants.

They have mainly developed in middle mountainous area of Shamakhi and Ismayilli regions.

The object and method of research

- The cut was constructed on the experimental base in the village of Melham, Shamakhi region, on the northern slope of 400m above the Shamakhi observatory road and at 85% in the bush cover.
- The erosion rate of the soil is determined by S.Sobolev method (based on genetic layering dissipation), structural composition by Savinov method, granulometric composition by Kachiniski method.

Results

- The brown brown soils in the southeastern part of the Greater Caucasus have a good fertility potential compared to other regions of the region.
- The erosion process significantly worsens the morphogenetic properties of these soils, significantly reduces the potential for fertility.

Analysis and Discussion

Mountain-brown soils are the basis of the mountain farming fund as shown. mainly used under grain beans and herbaceous herbs.

It has been cut in the area that has not been exposed to the erosion process to determine the genetic characteristics, morphological structure of gray-brown soils.

Morphological description of the cut

- A1 0-18 cm - dark brown, clay, granular structure, relatively solid. Botanical roots, large roots, humidified, are affected by HCl, the transition is clear;
- B1 31-52 cm - light brown, heavy-cylindrical, bronzed, solid, carbonate ointments, low humidity, sparse roots and roots, strongly boils under the effect of HCl, the transition is clear;
- B2 52-76 cm-light brown, open-top color, heavy-cylindrical, broken structure, solid carbonate eyeballs, humid, strongly boiling with HCl, the transition is clear;
- B/C 75-105 cm - light gray, heavily clay, stucco-free, solid, sparse roots and roots, many carbonated octahes, strongly boils under the effect of HCl.

As can be seen from the description of the morpholysis of the cut, genetic layers are present in the soil profile and the soil is not exposed to erosion.

Deep brown soils are used intensively in agriculture.

Here, weeds are cultivated in a wide area.

These lands are mainly found on slopes, and in some cases, on steep slopes, and are subject to tension due to their use. develops all kinds of erosion in the area, significantly worsening soil productivity.

Number of slices	Washing degree	Depth, in cm	The size of the fractions in mm, the particle size in%								
			>7	7-5	5-3	3-1	1-0,5	0,5-0,25	<0,25	>1,0	Sklet-liyi, %-lə
1	washed	0-18	51,8 3,44	11,9 7,35	13,8 8,48	10,8 18,27	3,5 8,44	2,6 13,68	5,6 38,53	88,3 37,54	1,85
		18-31	74,2 2,29	6,0 6,18	4,9 10,56	5,4 17,35	1,1 8,12	0,8 10,18	7,6 41,12	90,5 36,38	4,20
		31-52	67,5 2,14	6,1 3,77	5,9 10,42	5,0 16,61	0,8 10,03	0,7 11,53	14,9 43,91	83,6 32,94	1,59
		52-76	62,6 -	9,7 2,5	10,1 4,18	10,8 9,32	1,4 12,41	1,3 9,45	4,1 60,01	93,2 16,0	2,12
		76-105	48,0 -	6,8 -	6,9 4,52	9,4 5,36	1,5 9,93	1,0 8,90	76,4 67,89	71,1 10,08	3,20
2	Washed moderately	0-12	28,2 2,20	16,1 7,70	19,0 7,5	25,5 13,2	2,8 9,68	2,6 10,41	5,8 47,71	88,8 29,6	2,60
		12-38	44,9 -	16,8 3,4	15,9 6,35	5,2 15,8	0,8 9,5	0,8 8,8	15,5 52,45	82,8 25,55	3,7
		38-72	64,7 -	10,3 -	12,1 6,4	7,6 12,8	1,2 9,0	1,0 6,5	3,1 61,0	94,7 19,2	4,3

Table 1: Structure of the gray-brown soils, aggregate composition and effects of the erosion process (structure, aggregate).

The erosion process significantly weakens the water resistance of these soils. As can be seen from the table, the amount of particles in the moderately eroded soils exceeded 82.94% in the profile, but the amount of water resistant particles was 16.29%, which was 0.2-3.26 in the profile of unwanted soils, and washed 2.60-4.90.

The mechanical composition of the studied soils is clay and streaky.

The erosion process slightly simplifies the mechanical composition of the soils, which is associated with the washing of colloidal particles.

Number of slices	Washing degree	Depth, in cm	Fractions (mm), particle size (%)						
			1-0.25	0,25-0,05	0,05-0,01	0,01-0,005	0,005-0,001	<0,001	<0,01
1	washed	0-18	0.50	11,90	21,20	18,80	22,40	25,20	66,40
		18-31	0.32	10,88	24,40	19,60	18,40	26,40	64,00
		31-52	0.38	10,42	30,00	18,80	16,00	24,40	52,20
		52-76	0.32	10,48	34,00	15,20	15,60	24,40	55,20
		76-105	0.18	10,62	36,40	9,60	18,40	24,80	52,80
2	Washed moderately	0-12	0,48	11,12	24,80	30,80	18,80	24,00	63,60
		12-38	0,67	15,33	24,80	19,60	18,80	20,80	59,20
		38-72	0,50	11,10	34,00	18,40	19,20	16,80	54,40

Table 2: Mechanical composition of gray-brown soils and effects of erosion process (absolute in dry land, %).

As can be seen in Table 2, the number of natural clays in the profile of the soils was moderately degraded to 51.2-60.6%. This indicates that the soils are clayey and clayey. The number of lil fractions in the profile is 13.2-24.0%.

Conclusion

The erosion process drastically reduces soil fertility. Therefore, in cultivation of agricultural crops in these lands, the study of mineral and organic fertilizers is a must.

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