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Investigation of Influence of Erosion Process on Widespread Mountainous Cultivation Lands in the Slopes of Azerbaijan

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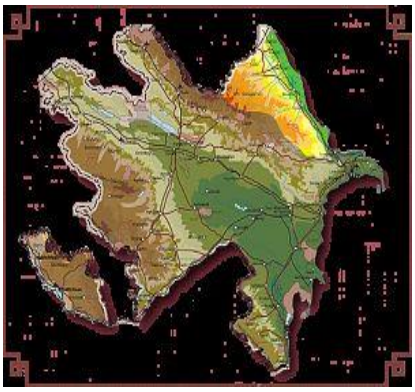
Abstract

The aim of the study was to investigate the development of erosion processes in the south-eastern part of the Greater Caucasus, the widespread gray-brown soils in the agricultural regions, the study of the effects of the erosion process on the varieties of cereal crops and soil fertility cultivated on the moderate erosion lands .It is proved by the fact that in the territory of the country, wide-spreading gray-brown brown soils have been used for many years, without any agro technical rules, even when no sowing systems are used, their agrochemical composition and other properties have been reduced to considerably degraded and less productive soils In this regard, it is desirable to develop and apply this unwanted anti-flood control measures in the field of erosion, which is widely developed in the area.

Key Words: soil, erosion, erosion and moderately eroded soils, fertility.

Introduction



In order to identify ways to increase soil fertility in modern agriculture, a scientific analysis of the specific properties of each soil should be given in order to be able to accurately determine the characteristics of soils in different regions. It is impossible to use these lands effectively and to get any crop from agricultural plants. Because of the fact that the soil is used for a long time under some or other plants (often under the same plant), their agrochemical composition and other properties become worse. It is possible to develop and improve the management of the lost soil fertility by taking into account them only in the development of agriculture. The research was also devoted to studying this issue.

The Object and Method of Research

The study was carried out in eroded and moderately eroded species of degraded brown soils spreading in the vertical direction of the Shamakhi region and forming the main fund of mountain farming on the southeastern slope of the Greater Caucasus. Soil samples were taken from their genetic layers and analyzed in laboratory conditions, where erosion was

not eroded to study the effects of erosion on land fertility, and in medium-eroded cuttings in natural (harvesting) areas. Degree of soil erosion is determined on the scale of S.Sobolev and KA Alekperov (1,2). The Shamakhi region is bordered by Guba in the north-west, Khizi in the north-west, Gobustan in the south-east, Hajigabul in the south, Aghsu in the south-west and west, and Ismayilli in the north-west.

Analysis and Discussion

The Southeastern Caucasus, including the Shamakhi region, has a complex geological and geomorphological structure. Because of the complexity of natural conditions and the influence of anthropogenic factors, the erosion process in the area has widespread and has deteriorated soil fertility.

Depending on the vertical direction of Relyev, this region is divided into 4 main altitude zones, which are sharp different from each other;

1. High mountain range (2200 m above sea level and above);

2. Medium mountain range (800-1000 m above sea level up to 2000-2300 m);

3. Low mountain ranges and foothills (200 m to 1000 m); 4. Wing girdle (28 m to 200 m)

The erosion has been developed stronger in the central part of the low mountainous belt relative to high gorges. According to the modern geomorphological division BA Budagov refers to the low mountain range of the Greater Caucasus, separating the Shamakhi-Gobustan regions by several half-lives [5]. The agricultural zone of the region is mainly composed of medium, low mountainous and foothills. The erosion process in the agricultural zone of the region has intensified and has spoiled large areas. The main reason for the erosion process in the mountain-farming zone of the region and its spread to large areas is the lack of attention to ordinary soil-protective agrotechnical measures on the slopes, non-extraction of sowing, sowing and other cultivation. The use of slopes in the middle and low mountainous zones, mainly under grain crops and low slopes, in the grape plantations, has also led to erosion strengthening and extensive coverage. Almost all types and types of erosion are found in Shamakhi region. Studies show that the mountainous-brown soils that are used intensively in mountainous cultivation in the middle and low mountainous areas of the region have been exposed to erosion. [3,4]. These lands are mainly formed of low-oak, brown mountain-forest lands developed under oak-vulture forests. The formation of mountain steppes in the areas without systematic breaks of the forests and the occurrence of degraded brown soils in these areas. Brown mountain-forested lands are relatively dry (with a rainfall of 400-500 mm) in climatic conditions. Here, rocks forming primarily consist of carbonate rocks or their abrasive products, clayey schists, and conglomerates. These soils are the thickness of the humus layer, the humus mass, the relative distribution of the profile, the high absorption capacity, the neutral reaction neutral or weak alkaline, mechanical composition is mainly clay, with high concentrations of carbonates in the middle layer. H.Aliyev (1972), M.E Salayev (1966), K.A. Alekperov (1961) and other researchers gave detailed information on the origin, morphological features, genetic features and other properties of gray brown soils [6.7]. For long periods of time under cultivation of agricultural crops, the grass landslides have disappeared from the upper layers of dark-brown soils in the sown areas and have not been planted, and some of their characteristics are closely related to stony landscapes (mountain black and gray-brown). However, the weak profile of the low profile, especially in the middle layers, is a major indication of the fact that the majority of carbonates have come from the bottom of the forest. It has not been eroded to characterize the morphological features of dark-brown soils and has been drilled in moderately eroded natural areas. Morphological signs of the erosion type of these lands are given in Desert Descriptive Figures 1.

1. A1 0-12 cm of dark giant, dwarfed, elliptic, soft, semi-dry, cuckoo, wormwood, pulses, multi-plant scraps, nane, moonlighted, HCl's tyiridine gyarn.

2. A2 12-37 cm - alfalfa, dark giant, large topavari (topavari) anwarya, soft, semi cuckoo, cuckoo, wormwood, semi-rotten plant residues, brown leaks, moisture, dandruff delay, gneiss.

3. B 37-58 cm - elliptic, light brown, unwanted cauliflower, soft, celiac cucumber, cucumber, brown spots, dried root hair, nana, moon's nighttime, thyme thyroid gneiss.

4. C 48-97 cm., Yellowish brown (brown) structure is selected, slightly solid, single gentle roots, sparse, weakly scented spots and boil.

Morphological signs of moderately eroded soils are given in the desert land of No.2.

1. A1 0-9 cm - alfalfa, open grayish, splinters (softened), soft, bark, cuckoo, plant scrap, worm paths, nana, moon latrine, Tiiririndian zircon of HCl.

2. B 9-32 cm - alfalfa, open grayish , splinters (pollinated), soft, sugar, cucumbers, herbs, worm paths, nanometers, moonlight, HCl's tyiridine helix.

3. C 32-55 cm - alfalfa, stubble brown, structure not selected, solid, single lime limestone, sparse thin roots, moisture, garnet.

It is clear from the morphological description that the structure of these lands has dramatically changed after the forest (especially in moderately erosive species). In the middle only, the structure of the scaffold is very poorly selected. At the moderately eroded type, the soil structure has been completely eroded. Numerous studies have shown that the importance of the structure is great, affecting the soil's aerosol, and its erosion resistance. In crop-structured soils compared to unstable soils, the crop yields more than 40-50-100%. The mechanical composition of the gray-brown soils is aggressive and gray. This is evident from both the morphological description and the results of the analysis. In the soil we describe, the amount of physical clay varies between 49.92-59.75% in the moderately eroded type of 56.20-63.76%. The relatively small degree of physical clay in the moderately eroded type shows that pomegranate particles were washed off as a result of incorrect use of soil. The majority of lil particles in the lower layers are related to the presence of an illudial horizon in those lands. In the case of moderately eroded gray-brown soils, this does not seem to be so obvious because the erosion process has led to considerable changes in the genetic layer. When compared with the erosion type of this soil, it is clear that the topsoil of moderately erosive species is 2.35% of total nitrogen 0.193%, absorbed ammonia 42.27 mg / kg, ammonia 8,74 mg / kg water soluble, nitrates 3.48 mg / kg, endocrine phosphorus 12.51 mg / kg, exchangeable potassium 117.66 mg / kg, respectively 1.11-1.53; 0.060-0.159%; 10,75-4574; 5,76-8,58; 0.79-2.76; 10, 34-15,69 and 15,80-221,40 mg / kg. Table. Because of the high absorption ability of these soils, the number of absorbed bases (Ca and Mg) is relatively high. However, these indicators were significantly lower in the erosion type. Thus, the total amount of absorbed bases (Ca and Mg) declined by 9.67-11.31 mg per square centimeter in the upper layer of 15,40 mq.eq (100gr soil) in moderately eroded soils compared to non-eroded soils. The total moisture content during the profile was 22.38-27.50% in erosioned soils and 16.64-19.38% moderately erosion. In the soil fertility, the importance of the structure and aggregate composition of the soil in water resistance, resistance to wind destructive forces is very high. It's Structural and aggregate particles (especially larger than 1 mm) that are not eroded in the soil have been quite good. Here, large structural particles of more than 1 mm are 8.57-94.51%, and aggregate (waterproof) particles are larger than 1 mm in the medium degree erosion type compared to the brown brown soils 31.95-59 in the upper layer, Varies between 39%. However, in the moderately eroded compared to eroded gray-brown soils, larger than 1 mm aggregate particles have been reduced by 31,16% in the upper layer by 20,77-21,88%, smaller than 0,25 mm in the upper layer 15.31%, and down 12.98 to 17.72% respectively. It is clear from this that erosion has sharply worsened the structure and aggregate composition of the soil by reducing the adhesive humus content. Soil washing occurs when surface volumes are high, with poor surface dehydration, low porosity. This situation is even more dangerous on the slopes. It is clear from the large number of studies that the erosion process has deteriorated the volume mass and porosity of the degraded brown soils.In the upper layer of the moderately eroded type compared to non-erosional lands, the volume of mass increased by 0.06 q / cm3, and the porosity decreased to 2,09 % in the upper layer and 2,04-2,27% on the lower floors. The results of the research show that natural and anthropogenic factors have been strongly influenced by the erosion process in the degraded brown soils. The erosion process in Shamakhi region has deteriorated its fertility by destroying these lands. So, these lands.

Number №	Teams	Depth of sm	Humus %	Total nitrogen in%	Nitrogen forms mg / kg			Phosphorus		Calium		$CaCO_3$ %-	Pn
					Amazing acne	Ammonia soluble in water	Nitrates	Percent of%	MOBILE mg / kg	Percent of%	Purpose mg / kg		
no erosion													
1	**A_1**	0-12	5,15	0,412	123,19	20,64	7,94	0,27	27,93	3,15	399,00	no	7,0
	A_2	12-37	3,21	0,280	107,10	18,90	6,30	0,22	29,03	3,10	368,20	no	7,0
	B	37-58	2.23	0,118	74,40	13,95	4,03	0,13	15,54	2,97	315,00	4,54	7,2
	C	58-97	0,92	0,088	64,44	10,67	3,05	0,10	7,32	2,94	130,75	4,85	7,3
Medium degree of erosion													
2	**A_2**	0-9	3,07	0,219	70,92	11,90	4,46	0,17	15,42	2,20	281,34	5,39	7,5
	B	9-32	2,31	0,131	61,36	10,32	3,54	0,15	13,34	2,25	208,40	7,61	7,7
	BC	32-55	0,70	0,058	52,65	8,19	2,34	0,08	5,20	2,80	93,60	6,81	7,5

It is recommended to use all erosion-free agro-technical measures in their utilization. The best of these measures and erosion, which is very cheap for the farm cultivation of perennial legumes in the exposed soils and making it suitable for sowing. Herbaceous herbs are well developed in eroded soils, enrich the soil with organic foliage, resulting in dense vegetation, reducing erosion and significantly improves soil fertility.

Results

1. In the Shamakhi region, south-east of the Greater Caucasus, the erosion process covers a wide range of areas and has drastically reduced crop yields.

2. As a result of anthropogenic factors in aggressive mountain grasses and agrotechnical measures were not carried out in time, the erosion process was strengthened.

3. Because of the fact that the soil is used for a long period of time, the agrochemical composition and other properties of the soil have deteriorated considerably.

4. To prevent erosion in the region, to prevent land degradation, to restore fertility and to further clarify the state of sowing, harvesting and harvesting, zonal complex anti-erosion measures should be taken.

References

1) Alekperov KA - Land erosion and struggle with it in Azerbaijan. What is EA? Baku, 1961, p. 219.
2) Aliev GA - Pochtov Bolshoi Kavkaz (in the limits of Azerbaijan SSR) Part I.Baku, 1978
3) Aliyev B.H Shakuri.B.G.Ibrahimov AA- Physiological and biochemical bases of application of mineral fertilizers under the wheat plant in the south-eastern part of the Greater Caucasus. Baku, 2003. pp. 29-40
4) AliyevZ.H., Giyasi HA - On the dynamics of change of foodstuff depending on soil erosion rates in mountainous farmland of Azerbaijan. Collection of Erosion and Irrigation EIA Works Baku, 2011, p. 135-146
5) A.Budagov - Theoretical and geophysical tectonics, South-East Caucasus Baku, 1973.
6) Sobolev SS - Elimination of erosionous processes on the territory of the European Union and the USSR in debt. The search of the USSR, M., 1960, T.2, pp. 80-122.
7) M.Salayev - Pochvy Malogo Caucasus.Uzd-voEN Azerb. USSR, Baku, 1966, p. 244-251.