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Full Length Research Paper

Studies of the possibility of determining the flush of slope soils with a slope of 12-14° using the example of the Shamakhi region of Azerbaijan

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This article describes the current conditions and unique satisfactory farming practices and principles in the slopes of the South-Eastern part of the Greater Caucasus, the Shamakhi district of the Mountainous Shirvan in Azerbaijan, the application of optimal irrigation norms and regimes, various cultural and technical cultivations. The fact that water, line and irrigation erosion is widespread is an intensive spread. Therefore, the study of erosion patterns within the country, characterized by its topicality, and the prevention of these erosion species, the intensity of their development, natural soil and vegetation with the use of comprehensive measures in the balance of results, with the aim of developing a large-scale application of benefits; Distribution among farmers and other land users, demonstrating that they are carrying out enlightenment activities, and that science-based comprehensive anti-erosion measures have been put into place. The study shows that surface washing, sediment flow, and so on in a single area (1) are observed in the area of different (12-14) 0 and (6-8) 0 ms, under the current rainfall under hay and natural grass vegetation. Nutrients impregnated with washed soil are designated and denominated in figures. 0.940 t / ha within; 28 min within - 1.59 t / ha and 22 min. As a result of this study, a 1: 100,000-m-potential potential erosion map of the South-East of the Greater Caucasus has been developed using a classic method.

Keywords: Inclination, nutritional elements, perennial plantings, weed, degree of soil washing, perversion, dialogue

INTRODUCTION

The total area of the Republic of Azerbaijan is 8641.5 thousand hectares. Out of this area 4524.8 thousand ha are in agricultural use. Of these, 1,638.3 thousand hectares are planted, 2576.1 thousand ha are pastures, and 109.5 thousand ha are for hayfields.

The Republic of Azerbaijan is mainly a mountainous country. The northern part of the country is surrounded by the highest peaks of the Great Caucasus Mountains and descends along the slopes of the main Caucasus range and extends into the shores of the Caspian Sea.

High mountainous and mountainous regions dominate along the north-west and south borders of the country (Alekpero, 1965, Aliyev, 2009). The central and eastern parts of the Kura-Araz lowland share.

One of the characteristic features of relief here is the fact that streams and ground water flow through it are intensive.

The climate of the Republic is distinguished by its diversity. The amount of rainfall in the plains area is 185-300 mm during the year, of which 10-15% falls on the summer season. The average annual tempo is 26-27°C for the Kur-Araz lowland.

Active temperatures range from only 4000-4500°C. 60% of the country's territory is covered by mountainous and foothill regions. Here, the difference in the altitude difference and the direction of the relief, the rigidity of the slopes make the natural conditions colorful.

As a result of these differences, a few excruciating and destructive external processes may occur on the soil surface, most of which are landslides and surface erosion.

The aim of the study is to eliminate the natural and anthropogenic impacts of slopes in the upper shirvan region of Azerbaijan, to identify the fact of loss of fertility

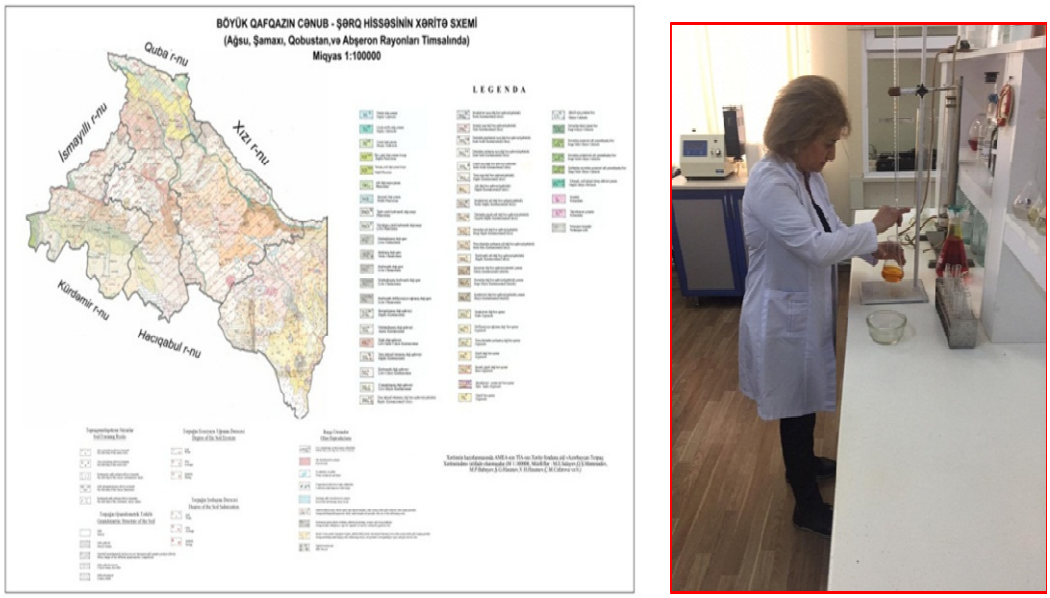

Figure 1. Soil erosion map of the study area in the mountainous Shirvan region. M 1: 100000 Miles.

Figure 2. Segmentation of variants for the purpose of determination of water-physical properties.

and, therefore, to prevent the erosion of washed soils and to apply appropriate soil erosion measures. As is known, the south-eastern slopes of the Greater Caucasus, which are at risk of erosion, are of strategic importance for the development of agricultural production in the country (Figure 1).

The course of study

Due to the intensive development of various types of erosion processes, which are widespread by natural and anthropogenic impacts in the Shamakhi region, it has not been possible to ensure that agriculture in the region is up to date. In this regard, in accordance with the training program of the current year, we undertook appropriate desert-soil-erosion studies in the field of production of Shamakhi base station of the Institute, which is the object of the research, making cuts and sampling of various genetic layers (Figure 2). Lithic laboratory studies were performed and the results were analyzed.

Special significance of the study

This is explained by the prevention of surface runoff and washout by natural and anthropogenic impacts, and by the development of erosion (erosion, water and irrigation) processes in the country, slowing down and increasing the fertility of the soils. Important state programs such as “Conservation of natural resources, their rational use” and “Sustainable needs of the population in food products” are being implemented, which is fully compliant with the requirements of the country's Global Food

Table 1.Water absorption of grassland lands.

The specified time in minutes	5	10	15	20	25	30	35	40	45	50	55	60
The amount of water in the soil is mm / min.	12.5	22.0	92.91	36.02	44.78	51.75	60.11	66.67	76.65	75.14	79.51	85.88
Gap velocity mm / min.	14.2.8	19.10	13.9	13.9	5.51	13.9	15.7	13.1	11.9	12.9	12.7	12.7

Table 2.Some physical properties of soil under grasses and the rate of moisture flow to wash.

Cut	Depth in sm	Specific weight g/cm^3	Volume Weight q/cm^3	Pore %	Fracture output. mm	Waterproof aggregate. diam. %	Flow rate with washing m/s
	0-20	2.45	1.13	52	0.81	1.11	0.081
	20-40	2.54	1.46	44		1.36	0.093
	40-60	3.67	1.46	41		1.7	0.116

Table 3.Dialogue of soils in natural grassland.

Indicators	5	10	15	20	25	30	35	40	45	50	55	60
The amount of water absorbed into the soil in mm	1114	1977	2667	3314	3871	4428	4976	5473	5971	6458	6936	5971
The rate of soil absorption mm/min	22.29	17.11	13.93	11.14	10.94	9.95	9.95	9.75	9.95	-	-	-

Security Program. It is considered a scientific contribution to the development of agrarian science.

Experimental part of the study: As it is known from the theoretical analysis carried out desert-soil-erosion works, soil properties play a special role in the formation of surface runoff and washing. First of all, these properties affect the soil's ability to collapse, and secondly, it provides particle strength against the surface water flow and the destructive effects of raindrops, which are also key factors for the flow. As far as soil science is concerned, the role of their properties in the evolution of the erosion process that has evolved depends on the genesis of the soils. Figure 2 shows the soil deposition fragment. The the study area is in the Shamakhi checkpoint of the institute is gray-brown, thick, clay, poorly washed and mainly carbonate. The results of the previous Phase I studies show that the amount of physical clay in these soils is 76, 80-81.20%. Particles greater than 0.05 mm are 10.00%. As these soils have high structural and porosity, they also have a great ability to collapse, and they are consistent with the measurements recorded during desert-soil-erosion studies (Table 1).

Research results

As can be seen from (Table 1), these soils can absorb 85.8 mm of water per hour, with a rate of up to 14.28 mm / min and 12.7 mm / min changing. These lands have been calculated and identified as erosion-resistant and are shown in (Table 2). As can be seen from the (Table 2), the bubble output on the floor is 0.81 mm and the average diameter of the water resistant aggregates is 1.11 mm. The washing speed is 0.081 m / sec. The second area of rain is the area below 1ha of Khasha cultivation. Here, too, the soil has a great ability to collapse (Tables 3- 6). Erosion resistance of cannabis cropland is higher. Thus, the bubble output here is 0.55 mm and the average diameter of the water resistant aggregates is 0.80 mm. The most characteristic feature of this is the high viscosity of the soil. The result the flow rate here is great for washing. The calculation shows that this rate is 0.24 m/s. In this case, the slope inclination in the field of Khashan ranges between 12-140 (Tables 3-6).

Experience shows that surface runoff and washing of soil in arable land, along with other factors, depend on the cultivation of the soil. Many researchers have found this to be true. It shows that agrotechnical measures are of great importance in the fight against erosion (Aliyev, 2007). Cultivation of soil causes changes in its properties. At this time, the water, air, heat and nutritional regimes of the soil are aligned and the development of plants is accelerated.

Artificial rainfall was done in the fields of pea and winter wheat to study the effects of surface runoff and washing on individual agro-technical measures. It is known that the slope tendency affects the distribution and direction of raindrops. In addition, the geographical relief of the area directly influences the precipitation of the atmosphere and, in particular, rainwater.

From scientific research in the field of known research, and in particular the results of Aliyev, 2001; Gadzhiev, 2004; Giyashi and Guseynov, 2009; Huseynov, 2001) research, it is concluded that the slope tendency affects the hydraulic gradient of the absorbing water. This causes pressure-free water to form on the slopes as

Table 4.Erosion resistance of soils under cross-cultivation

Depth in sm	Specific weight g /sm	Volume weight g / sm	Total porosity %	Fall in mm	Waterproof aggregates diameter in mm	The velocity of the flush flow is m/sec
0-20	2.54	1.13	52	0.55	0.8	0.24
20-40	2.57	1.45	44	-	1.41	-
40-60	2.67	1.46	41	-	1.45	-

Table 5.Washing of soil depending on rainfall parameter

Degree of inclination	Year of research	The rain is continuing min	Rain intensity mm/min	Rainfall in the area mm	1ha Surface flow mm	Surface flow kg	Flow rate	Washable soil in kg	1 hectare washed land t/ ha
12-14	2018	30	1.21	36	828	7.8	0.01	47.0	0.940
12-14	2018	28	1.91	53	1219	12.0	0.012	79.5	1.59
12-14	2018	22	2.55	55	1265	13.0	0.014	99.8	2000

Table 6. Soil moisture before and after rainfall in the field of cannabis

Variants Intensity mm/min	Before rain		After the rain	
	Depth in sm			
	0-10	10-20	0-10	10-20
1.2	20.0	14.39	48.1	47.6
1.9	24.4	26.2	38.6	31.5
2.55	22.8	16.80	44.4	21.5

surface runoff and accelerate at high speed. As the slope increases, soaking rate decreases, which creates conditions for erosion processes. Three variants of rainfall in the area of Khasha plantation were carried out at the site of the object: Version 1.12 mm / min. The intensity of rain continued for about 30 min. At that time, 36 mm of rain fell on the surface and 47.0 kg of soil washed away from the pitch. On one hectare, 0.940 tons of land was exposed to erosion.

Conclusion

The results of the research show that different parameters of artificial rainfall under the same conditions influence the washing up of the soil. Of these, the intensity of rain plays a major role. The intensity of the rain affects the diameter of the drops, and the diameter of the drop, which increases its ginetic energy and destructive strength. Soil agrotechnical measures have a positive effect on the water-physical, thermal and air conditions of the soil, and the rate of surface flow here is also weak and its ability to wash down. Soil cracks are one of the most effective measures to prevent erosion.

Every 1.5 m here, open fractures give better results during heavy rainfall. Rainfall at this intensity is formed within a short distance, creating a surface flow. Cracks close to each other can prevent the flow from escalating, thus weakening the wash. An analysis of perennial research materials on this topic shows that no agro-technical measures were applied on the gray-brown soils in the southeastern slopes of the Greater Caucasus, when the grass planted 1.35 t / ha, and 0.940 t / ha when the soil was opened. is assumed.

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