Развитие рисоводства в новых экономических условиях связано с проблемами. Из-за изменения спроса на рынке необходимо ежегодно изменять структуру посевных площадей рисового массива, это обусловлено самостоятельностью хозяйств, изменяющейся конъюнктурой рынка, приоритетом собственных интересов и отсутствием ограничительных рамок со стороны государства, прекращающего участие в экономическом регулировании. Эти предпосылки создают условия для хищнического использования ресурсов (с нарушением севооборотов, водного режима) и ухудшения экологической обстановки.

Повышение эффективности использования как водных, так и земельных ресурсов на рисовых системах Краснодарского края можно обеспечить, за счет:

- комплексного и рационального использования земельных ресурсов на севооборотах, которые включают кроме риса, пропашные, зерновые яровые и озимые культуры [8,9];
- применения комбинированного режима орошения риса и сопутствующих культур.

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Hipsimetric and morphometric characters of soil surface in the Gobustan region

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Аннотация

В ходе исследований было определено, что рельеф зоны сложный, очень фрагментированный и потенциальная опасность эрозии выше. Было определено на

карте, что основная часть (68,1%) Гобустанской зоны, расположена на высоте 500-800 метров над уровнем моря. Площади с уклоном поверхности более 10 составляют 71,3%. Потенциальная опасность эрозии в зоне очень высока. Было установлено, что глубина локального эрозионного основания превышает 50 метров, а наибольшая - 600-800 метров. Также было определено, что юго-восточная часть Большого Кавказа и Гобустанская зона являются наиболее фрагментированными регионами. В этой части густота сети оврагов-ущелий составляет в основном более половины на один квадратный километр.

Ключевые слова: морфометрические признаки, наклон, гипсометрические показатели, основа локальной эрозии, фрагментация поверхности, эрозия.

Abstract

It was determined during the research that the relief of the zone is complex, very fragmented and the potential riskiness of erosion is higher. It was defined on the map that a main part of the Gobustan zone, i.e, 68,1% concentrated at an altitude of 500-800 meters. The areas of which surface inclination is more than 10 are 71, 3%. The potential riskiness of the erosion in the zone is very high. It was found that the depth of the local erosion basis is deeper than 50 meters and the most depth is 600-800 meters. It was determined that the south-east end of the Great Caucasus and the Gobustan zones are the most fragmented regions. Here the density of the ravine-gorge network is mainly more than 0,5 km at one kilometre.

Key words: morphometric characters, inclination, hypsometric indicators, local erosion basis, surface fragmenting, erosion.

Introduction

The morphometric features of the relief possesses an important role in development and spreading of soil formation and development of erosion process. Especially, the relief factor can affect the soil erosion development in arid climatic condition. The researches have been performed in this direction and enough information has been obtained [3,4].

The south -east of the Great Caucasus and the low mountain of Gobustan in Azerbaijan are used as pastures. But, weakness of the plant cover under the arid climatic condition and short-term rainfalls and intensity caused the erosion intensity. Especially incorrect performance of grazing stimulates this process [2].

At present a main part of meeting the demand for food in our country is related to the Livestock development. Here one of the urgent problems is soil protection for the Livestock development, increase of their fertility and productivity.

It is known that a role of morphological and morphometric features of the relief is very great in revealing of the erosion reasons in realization of this work performance and in preparation of the fight measures against it, we characterized morphometric indicators of relief in the same zone for this purpose.

Place and methods of the research

The researches have been performed in the south-east end of the Great Caucasus (in Gobustan). As it is known from its name that this zone is distinguished with the density of ravine gorge network.

A climate of the research zone belongs to mild and semi desert dry- field climate. The precipitation amount is 250-450 mm, an average annual temperature is 14.0. The precipitations fall in autumn –winter months of the cold period of the year. The plant cover consists of wormwood, ephemerals. Some cereals develop in a moisture period of the year. The soils are grey-brown (castanozems) and its subtypes. They are mainly heavy Loamy and clayey, and their sustainability against erosion isn't higher [1].

The researches have been carried out on the hypsometric map with the scale of 1:100000 in a cameral situation. The modern GIS-methods were also used in addition to the traditional methods in maps composition [3,5].

Research consequences and analysis.

The investigation of the morphometric features of the relief in the administrative region of Gobustan indicates that the zone possesses very complexity of these features is characterized by mountainous and foothill relief. Sedimentary origin of rocks, softness and poor resistance to erosion lead to intensive surface fragmentation. An inclination of the research zone is different and high. Almost the surface liquid and mudflow occur inclination. The potential riskness of the erosion development of soils in such area is higher. In connection with grazing on the slopes, the paths are formed in the inclined direction on the surface and later it resulted in creation of small ravines. An absolute height of the region begins from 200 meters until 1047 meters. The Lowest area occupies a small zone- the Langabiz chain in the south-west. The Chichakli mountain is the highest mountain in the region, its height is 1047 m. The Maraza plateau occupies a main part of the zone. Here some chains are available. A small part of the Langabiz- the south end 250 s part of the Yurtan- mountain chain and chichakli chain is situated in the district.

The hypsometric indicators of the zone is very complicated 247,8 hectares of the total area surround less than 200 meters, 1511,4 hectares 200-300 meters, 17175,0 hectares 300-400 meters and 22945,8 hectares 400-500 meters of the heights (table 1).

Table 1

The populations hypsometric indicators

Number	Absolute height , m	Area	
		By hectare	%
1	Up to 200	274,8	0,2
2	200-300	1511,4	1,1
3	300-400	17575,0	12,5
4	400-500	22945,8	16,7
5	500-800	93569,4	68,1
6	800-1000	1923,6	1,4
7	1000 tall		
Total:		137,00	100,0

68,1% or 93569,4 hectares of the zone are at an altitude of 500-800 meters, a small part of the change 1923,6 hectares or 1,4% are at an altitude of 800-1000 m. It is known from the Table that a main part of the region, including the farms are concentrated at an altitude of 500-800 meters.

As the zone has Low mountainous and plateau relief, the surface inclination is high enough (table 2). The surface inclination of the great part of the zone is 1-100, 28,7% or 38746,8 hectares are below its 10. The erosion danger of these zones is very weak. The zones with 1-30 inclination are 30915,0 hectares or 22,5%. The erosion riskness of the soils in this region is weak and average- degree. The areas with 3-50 are 28,1%, the erosion riskness is mean and high. The surface inclination of 99,3 of the zone is 150.

Table 2

Surface inclined indicators of the zone

Number	By inclined degree	Area	
		By hectare	%
1	0-1	38746,8	28,7
2	1-3	30915,0	22,5
3	3-5	98606,4	28,1
4	5-10	26243,4	19,1
5	10-15	1511,4	1,1
6	More than 15	961,8	0,7
Total:		137400	100,0

Table 3

Division of the zone according to the depth of local erosion basis

Number	Depth of the local erosion basis, m	Area	
		By hectare	%
1	0-50	-	-
2	50-100	26380,8	19,2
3	100-150	27754,8	20,2
4	150-200	20060,4	14,6
5	200-300	44929,8	32,7
6	300-400	12228,6	8,9
7	400-500	3022,8	2,2
8	500-600	-	-
9	600-800	3022,8	2,2
Total:		137400	100,0

An importance of the depth indicators of the local erosion basis of the zone is great in soil eroding and potential riskness of its development. Increase of the erosion basis depth rises an erosion riskness of soil cover. An analysis of the calculations on the map shows that the depth of the local erosion basis is more than 500 meters less than 800 meters (Table 3).

A main part of the zone has 50-300 meters – erosion basis depth. So, the local erosion basis of 86,7% of the zone vibrates by 50-300 meters. The rest 13,3% of erosion basis is 300-800 meters.

Table 4

Division of the zone according to the length of the ravine and valley network.

Number	Depth of the local basis, m	Area	
		By hectare	%
1	0-0,1	9618	7
2	0,1-0,3	2748	2
3	0,3-0,5	12366	9
4	0,5-0,7	35724	26
5	0,7-1,0	52212	38
6	1,0-1,1	6870	5
7	1,1-1,2	12366	9
8	1,2-1,3	4132	3
9	1,3-1,4	1374	1
Total:		137400	100,0

The researches show that the Gobustan zone were fragmented by the ravine and valley network. We defined by the calculations on the map that a length of the ravine and valley network changed from 0,1 km to 1,4 km² per square kilometer, this occupies 1% of the total region zone. But 64% of the region surface is fragmented by 0,5-1,0 km ravine and valley network per square kilometer.

A great part of Gobustan exposed to ravine-gorge network development strongly. Especially, as we noted the arid climate, weak plant cover development, fragile sedimentary rocks and as a result of the soil cover being so thick, complex surface structure formed ravine-gorges intensively.

The valley, including the dry valley doesn't create dense network in the region. But there are valleys possessing temporary flow. We can show an example: Jeyrankechmaz, Gozluchay, Gilgilchay, Pirsat rivers.

It is clear from the analysis that the morphological and morphometric indicators of the surface in Gobustan shows that its soil cover is intensively eroded. It is possible to prepare

and apply different measures system against erosion considering the morphological and morphometric characters.

Conclusion

The researches indicate that the hypsometric indices of the Gobustan region is different. This variety affected some morphological and morphometric features. Variety of the surface inclination is higher than 3-5° and it this rises potential riskness of erosion. Entry of the Gobustan territory into the Low mountainous belt is distinguished with the depth of the local erosion basis. As a result an intensive development of the surface fragmentation and erosion is formed and ravine-gorge including the river valley network develops.

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