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## PREREQUISITES FOR SOLVING THE ISSUES OF THE DEVELOPMENT OF SOIL EROSION OF SLOPE LANDS IN AZERBAIJAN

**Prof. Academician. B.H. Aliyev; Prof. RAE Z.H. Aliyev**

**Institute of Soil Science and Agrochemistry of the National Academy of Sciences of Azerbaij**

**Email-: zakirakademik@mail.ru**

### ABSTRACT

The article examines the issues of the possibility of studying the areas of development by soil erosion and its control. The study proved that the development of soil erosion is based on the forming impact of natural and anthropogenic factors. The degree of potential danger and the possibility of prevention, taking into account the preservation of the environmental situation in the foothills of the Upper Shirvan in the example of the Shamakhi district of the Republic of Azerbaijan, were studied. The main tasks of the study were determination of the amount and degree of development of eroded and erosion-prone soils of the foothill zones, carried out on the basis of soil erosion surveys of the farms of the republic.

### KEYWORDS:

Erosion, soil; assessment of the degree of erosion environmentally hazardous; anti-erosion measures.



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## INTRODUCTION:

The territory of Azerbaijan is under the environmental impact of the catchment valley of the Caspian Sea. Here environmental problems, the solution of which are regional and depend on interstate relations, and for this reason they become tense day after day. It must be said that the soil is subject to erosion, forest plantations, mountain groves, water sources, and other natural formations fail.

Geologically and geographically, the study region has a rather complex structure, where high mountains and steep slopes alternate with foothill territories and plains, which in turn contributes to the development of a rather variegated climate and a variety of vegetation cover.

The complexity of the geomorphological structure, the presence of steep slopes, as well as anthropogenic impact, have a significant value in the intensity of surface runoff, which in turn enhances the development of erosion processes, as a result of which wide ravines are created, which in the final stage appear as gullies, changing the geomorphological appearance of the region as a whole.

In general, in the Shirvan zone, E.M. Shikhlinisky [7] distinguishes 3 types of climate:

- (1) Moderately warm, a zone characteristic of flat areas with relatively mild winters;
- (2) Moderately warm wet type with a uniform distribution of precipitation throughout the year, covers the foothill part of the zone and
- (3) Cold climate with humid winters, typical for the foothill and mountainous areas of the zone.

The minimum air temperature is 0.50C in January, and the maximum is 23.60C in July.

The average monthly soil temperature ranges from -10C to -30.70C. The minimum soil temperature of -10C is in January, the maximum is 30.00C (July) and August is 30.70C.

The annual amount of precipitation is 692 mm, the largest amount of which falls in the months of April - June. The annual evaporation rate is 825 mm. The average annual relative humidity is 71%, fluctuating over the season from 59 to 87% [7].

It should be recognized that the results of numerous fundamental and applied research on the development of soil erosion and anti-erosion measures have proved that the study of the problem by modern methods is inevitable and naturally it has always been practiced, however, it should be said that with the use of new works on the above topics, another stage in information support opens. Experimental and applied research in this area of science, where solutions were sought to prevent it through an integrated approach to solving the problem of research on the study of the development of areas of the erosion process.

It is known that not a complete list of information on erosion anthropogenic factors and its ecological consequences.

The authors proceeded from the fact that each science requires a certain accuracy and clarity of concepts, and as new results are achieved, the measures of struggle and the classification of the objects under study are continuously improved. Many scientists were engaged in these issues, for example: Zavaritskiy AN (1947); Sobolev S.S. (1948), K.A. Alekperov D.A. (1950-1970), Khalilov M.Kh. (1972-1989), Ibragimov A.A. (1967-2010), Shwebs G.I. (1977), Belgibaev M.E. (1970), Budagov B A. (1953-2006), Aliev B.G. (1990-2016); Zaslavsky M.N. (1972-1979), etc.), in

whose works the terms derived from the word erosion, as well as the concepts of water and wind erosion themselves, were interpreted very broadly and not always definitely, and in this regard, many examples of contradictory their interpretation. Among the authors of their published monographs, the closest argued are M.N. Zaslavsky, K.A. Alekperov, B.H.Aliev [2] who, instead of the widespread term water erosion, recommends using the term soil erosion to denote both soil washout and erosion by surface runoff temporary water flows, and the term deflation (blown off by the wind) instead of wind erosion, which absolutely accurately reflects the essence of the phenomenon.

The scale and geography of soil degradation, the economic damage from erosion, cited in the reporting materials of numerous studies and monographs by the authors.

The significant structural changes carried out as a result of land reforms in agriculture, which began in Azerbaijan beginning in 1990, led to a reduction in the area of agricultural land, the withdrawal from agricultural use of vast areas of arable land and fodder land, covered by degradation, enormous economic and environmental damage and a threat to our very existence. soil as the main means of production and an irreplaceable component of the biosphere.

It is known that the patterns of manifestation of soil degradation are associated with natural-climatic, lithological-geomorphological features, as well as the intensity of manifestation of anthropogenic influence.

The Republic of Azerbaijan, with all its insufficient knowledge, is characterized by significant areas of arable land with a very low humus content, high acidity, and a deficiency in the phosphate regime of soils.

The results of this study determined that slope lands in Azerbaijan occupy 3236 thousand hectares of area.

The distribution of the land fund in the natural and economic zones of the republic according to relief conditions is arranged as follows (tab. 1.). [2,6].

**Table 1.**

**Distribution of the land fund in the natural-economic of the republic by relief conditions  
Natural-economic zones Suitable for arable lands zones**

Naturalandeco miczones	Suitable for irrigated land due to relief conditions	Including slopes			
		<0,05	0,05+0,10	0,10+0,20	0,20+0,40
1	2	3	4	5	6
Ganja-Kazakh	427,50	251,0	72,8	63,70	40,00
Shirvanskaya	680,80	522,6	50,0	66,10	42,10
Karabakh-Milsk	749,00	567,6	80,20	47,40	53,80
Mugano-	429,8	402,4	2,8	17,1	7,5

Salyanskaya					
Sheki-Zakatal'skaya	322,7	236,5	42,7	23,8	19,7
Lenkoranskaya	81,5	79,5	2,0	-	-
Absheron	52,7	31,1	21,6	-	-
Kuba-Khachmazskaya	203,5	179,1	24,4	-	-
Upper Karabakh	133,7	24,7	27,8	37,6	43,4
Nakhichevan	154,2	95,3	38,0	11,2	9,7
TOTAL OF THE REPUBLIC	3235,4	2390,0	362,3	266,9	216,2

On the development of mountainous and foothill regions on the slope lands of Azerbaijan with the use of newly developed technical means of irrigation, we have carried out a large amount of long-term research work under the leadership of B.G. Aliyev [2].

Considering the above, the following irrigation methods are recommended for mountainous and foothill areas:

1. along furrows with a gap;
2. Sprinkling with low rain intensity;
3. finely dispersed humidification in combination and without a combination with sprinkling;
4. Drip irrigation, etc.

Irrigation along furrows with a crevice of the area < 0,03 for other crops under the conditions under consideration, the surface irrigation method is not recommended due to uneconomical water consumption.

It should be noted that the creation and development of new progressive irrigation methods is an exception to irrigation erosion, to save irrigation water and not to violate the ecological protection of the environment. From the above it follows that when developing mountain slopes not only in Azerbaijan, but also in the countries of the World, a careful approach is required for the correct choice of irrigation technique and technology, it is recommended for irrigating row crops on lands with slopes. Vineyards.

Often, slope lands of 30-40 degrees or more are used for vineyards with rows along the slope, which creates the most difficult conditions for the operation of agricultural machines and enhanced washout of the top fertile soil layer in the aisles.

Therefore, the author believes that when laying new orchards and vineyards, one should not go for the seemingly more economical way of laying in the direction of the slope. There is also the use of steep slopes for sowing grain and fodder crops. [2,3,4,6]

To solve this problem, it is necessary to differentiate lands according to their natural potential and the degree of erosion, followed by the determination of a set of measures to stop the processes of degradation and restoration of land fertility, followed by zoning of the territory of the republic according to the degree of erosion with the obligatory consideration of all factors affecting the state and use of lands in various types of soils of the republic.[2,7]

At the same time, it should be recognized that the effectiveness of the anti-erosion measures developed by us and to prevent the danger of the erosion process is a complex of protective means that contributes to the regulation of surface runoff, protection of soils from washout, erosion, at the same time, the restoration and improvement of the fertility of washed away soils and the involvement of washed away lands in the rational use in agriculture of the republic. [3, 6, 7]

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