



MELEORATIVE IMPROVEMENT OF THE ENCROACHED LANDS OF THE NAMANGAN ADYRS OF THE REPUBLIC OF UZBEKISTAN

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Abstract

Although soil protection against erosion is of ameliorative importance, they mainly perform the function of preventing the manifestation, growth and development of linear forms of erosion and practically do not solve the issues of highly efficient use of areas occupied by ravines. Modern technical equipment of agricultural production allows the use of methods of radical reclamation of destroyed ravine lands by partially or completely filling with local or imported soil.

Keywords: Gully, development, volume, earthwork, event, backfill, parameter, morphometer, length, width, reclamation, radical

Introduction

Widespread anthropogenic land development in Uzbekistan 1975-1980 It affected the activation of the processes of erosion and technogenic soil disturbance, which led to a reduction of more than 300 thousand hectares of agricultural land and deterioration of the soil and ecological situation of the country. The problem is aggravated by the fact that in the arid zone and the mountainous region of the Republic, the use of traditional methods of reclamation and reclamation of soils disturbed by ravines and man-made human activity. [1, p. 4].

Ravine-prone places are of great importance, the relief of which we call a set of irregularities of the earth's surface, which is especially characteristic for the development of ravine formations. Depending on the nature of the terrain, the terrain is divided into flat, hilly and mountainous. [2, p. 92].

Soil conservation agriculture and afforestation. New subtypes of man-made soils, represented by outcrops and mounds, are formed on the planned surface of the fenced area. The exposed area is characterized by dense composition and low filtration capacity. The bulk surface is characterized by subsidence and potential suffusion hazard, looseness of the profile and significant water permeability. Therefore, one of the non-alternative methods of agricultural use of overgrazed lands is the root reclamation of ravines. It provides for a complex of reclamation techniques for the reconstruction of eroded lands in order to create a cultural background on them. [3, p. 7].





In general, the entire planned surface of the soil-substrate has low fertility and minimal erosion resistance. Therefore, in the development of ravines for agricultural use, there is a need to solve these inseparable tasks: preventing the manifestation of erosion processes and intensive increase in the fertility of planned lands.

Soil conservation agriculture on the area of the reclaimed surface should be comprehensive, combining agro-forestry and hydro-reclamation techniques for protecting soils from erosion. [4, p. 236].

This method of ravine development is acceptable for the zone of loess deposits, because the rocks are characterized by relatively high potential fertility according to agronomic properties.

Since ravines, especially "Mountain" ones, can include different forms of relief in genesis, morphology and time of formation (from ancient to modern). [5, p. 95].

The development of ravines on ravines in ravine-prone areas in the initial stages largely depends on the booking role of vegetation, which is determined by the amount of ground mass and roots. These indicators in natural landscapes are determined by the biological type of vegetation, and for cultural ones by the agrophone. But the soil-protective role of plants in conditions of natural moistening cannot be established regardless of taking into account the periods of vegetation development and erosion-hazardous precipitation. The soil protection capacity in our case is calculated by dividing the projective cover by the maximum 20-minute erosion index of precipitation. [6, p. 92].

The development of ravines and the creation of a cultural background on them requires a scientifically based approach to the technological stages (A-B) of soil conservation agriculture.

In order to develop backfilling and planning of the encroached lands in the root reclamation, it is necessary to study the patterns of manifestation, growth and development of linear forms of erosion with the identification of their morphological and morphometric characteristics. [7, p. 93].

Calculation of the volume of earthworks. The volume of earthworks is directly proportional to the parameter (morphometry) of the ravine to the planned slope of the slopes being plowed.

To determine the parameters of the ravine, data on length, width and depth are collected. Its length is determined by measuring the bottom with a measuring tape. The average width ($Vs.r.$) is calculated as a half-sum of the width of the ravine at the top and the width of the bottom. The depth of ravines (H) in the initial stages of development can



be determined by measuring the height of the cliff, and subsequently - the length (l), the steepness of the slopes ($\text{tg}\alpha$) according to the formula (1). [7, p. 94]

$$H = l \cdot \text{tg}\alpha \quad M \quad (1)$$

The width and depth of ravines are variable in profile. Poets should be measured in places where there is a clear difference between these indicators or through conditionally accepted equal segments $10, 20, 30, \dots, n$, m. The fewer segments, the more accurate the calculations of their parameters will be. Then the weighted average value of the depth and width of the ravine is calculated according to the formula (2) [4, p. 94].

$$H_{cp. \text{б.г.}} = \frac{H_1 + H_2 + H_3 + \dots + H_n}{n} \quad M \quad (2)$$

$$B_{cp. \text{б.г.}} = \frac{B_1 + B_2 + B_3 + \dots + B_n}{n} \quad M$$

where p - the number of measurement points.

Using formula (2), the total volume of soil removed from the ravine is calculated (V)

$$V = 0,5 \cdot B_{cp. \text{б.г.}} \cdot H_{cp. \text{б.г.}} \cdot l \quad (3)$$

In the case when the ravine is completely filled in, the required volume of soil to fill it will be equal to the volume of material taken out during its formation.

If partial irrigation of the slopes of the ravine is carried out, then the volume of the cut soil will always be less than the volume taken out. With partial irrigation, it is necessary to clarify the optimal projected slope of the reclaimed surface. The choice of the design slope depends on a number of factors: the properties of the soil, the underlying rock, the size of the ravine, methods of development and agricultural purposes.

For areas of irrigated agriculture of Uzbekistan in determining the projected gradient must adhere to the following criteria:

1. If the degree of the dismemberment of the territory of the gullies does not exceed the thickness 0.7 km/km^2 and it cuts arable land with a slope of not more than 5° , as well as the boundary concentrations of soluble salts lies at a depth of 5 m and it is suitable for planting row crops, the slope should be less than 5° .



2. If pryovrazhne areas are dominated by slopes greater than 3° and in the future it is planned to use them for gardens and vineyards, the projected gradient of the slope may exceed 50° .

3. If the depth of the mass accumulation of soluble salts deeper than 5 m from the surface, the project selected a steeper slope (10°) with the sowing of perennial grasses and grass-legume crops, and the laying of trees is carried out at the micro - and macroceras (a slope of more than 15°).

4. If the gully is filled with imported ground for a wide mechanization of field work it must have a slope.

Development projects can be drawn up for individual ravines or according to their systems with a coverage of no more than 5-7 hectares. Reclamation techniques of soil conservation agriculture are planned separately for each site (development block).

For example, to fill a ravine with a total length of 105 m, a weighted average depth of 4.5 m and a width of 3.4 m, it is necessary to demolish the soil in a volume of 1600 m³. If the steepness of the priovrazhny area is $1.8-2.0^\circ$, and its area is 1.8 hectares, then the projected slope of the backfilled area will not exceed 5° . This means that this reclaimed surface can be developed for narrow-row crops.

Filling and planning of ravines. In the process of full or partial filling of ravines, the soil profile is transformed, new technogenic soils are formed on the planned surface. Technogenic soils loess zones will mainly have a weak degree of salinity, dusty fractions will prevail in the granulometric composition, the content of humus and water-bearing aggregates is reduced by 2-3 times and correspondingly.

If the conditions do not correspond to at least one of these indicators, then it is impractical to carry out land use. The depth of the surface layer of the graft's demolished soil depends on the thickness of the humus horizon, in light serozems it is usually 10-15, typical serozems 17-20, dark serozems 20-25, meadow soils -25-30 cm, slightly alluvial differences of 20- 35 cm and strongly alluvial more than 35 cm. Therefore, prior to the reclamation work, a detailed soil survey of the surrounding adjacent territories is required in order to establish the capacity of the transplant.

The cutting of the fertile layer of priovrazhny soils and its storage at a distance of up to 50 m should be done by bulldozers, and more than 50 m by a creeper. Then the ravine is filled with exposed soil to the projected slope and the surface is carefully planned, After mechanical ramming, the stored humus layer of soil is evenly applied to the planned surface.

In the overgrown areas of the Republic, the soil cover is mainly (more than 80%) represented by medium- and heavily-washed soils. Therefore, removal, transportation and application of a fertile soil layer to planned ravine lands can be



carried out from other sites. At the same time, the graft (applied layer) should have, along with an increased content of the organic part of the soil, favorable physico-chemical properties. For example, in the case of land use, where the base consists of clay rocks, soils of a lighter mechanical composition are recommended as a graft, and to achieve greater connectivity of sandy soils, it is advisable to use heavy soils. The best quality graft can be washed varieties of soils or floodplain soils.

The best terms for the development of ravines by backfilling for the conditions of Uzbekistan are October-November. During this period of the year, the fields are freed from crops, there is a natural moistening of the surface and a uniform compaction of everything.

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Volume 5 - Issue 4 Impact Factor: SJIF = 6.549.

