METHODS OF INTEGRATED PLANNING OF THE ENCROACHED LANDS AND MELEORATIVE IMPROVEMENT OF ADYROV

[1]Dadakhozhaev Anvarjon, [2]Igamberdieva Dilfuza
[1]Namangan Civil Engineering Institute
[2]doctoral student Institute of Soil Science and Agrochemical Research
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Abstract. *The paper considers backfilling, layout, methods of development of the enclosed areas. In the ravine-prone territories of Namangan Adyrs, from organizational and economic measures into the practice of the agro-industrial complex, we have introduced a complex of soil-conservation farming systems: the development of ravines and the creation of a cultural background on them, which require a scientifically based approach to the technological stages of soil-conservation agriculture.*

Keywords: *backfilling of overfilled areas, planning of overfilled areas, development of ravines, development of soil protection agriculture, ravine parameters, bottom measurement, depth of ravines.*

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. [1, p.5]

Backfilling, layout, methods of development of the enclosed areas. In the ravine-prone territories of Namangan Adyrs, from organizational and economic measures into the practice of the agro-industrial complex, we have introduced a set of soil conservation farming systems - a two-time annual accounting and assessment of eroded lands by farms [2, p.16].

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

The calculation of the volume of earthworks is concluded as follows. The volume of excavation is directly proportional to the parameter (morphometry) of the ravine and the planned slope of the flattened slopes.

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 ($B_{ср}$) is calculated as half the sum of the width of the ravine along 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) of the steepness of the slopes (tgά) according to the formula (1):

$$H=l \cdot tg\acute{a}, \text{ м} \qquad (1)$$

The width and depth of the ravines are variable along the profile. Therefore, measurements should be made in places where there is a clear difference between these indicators or through conventionally accepted equal segments 10,20,30...n, m. The smaller the segments, the more accurate will be the calculations of their parameters. Then the weighted average value of the depth and width of the ravine is calculated using formula (2);

$$H_{ср.взв} = \frac{H_1+H_2+H_3.....H_n}{n}, м$$

$$B_{ср.взв} = \frac{B_1+B_2+B_3.....B_n}{n}, м \quad (2)$$

Where n is the number of measurement points.

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

$$V=0,5 \cdot B_{ср.язв} \cdot H_{ср.взв} \cdot l \quad (3)$$

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

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

Development projects can be drawn up for individual ravines or for their systems with a coverage of no more than 5-7 hectares. For each plot (development block), ameliorative methods of soil and water protection agriculture are outlined separately.

For example, to backfill a ravine with a total length of 105 m, a weighted average depth of 4,5 and a width of 3,4 m, it is necessary to demolish soil in a volume of 1600 m^3. If the steepness of the ravine area is 1,8-2,0^0, and its area is 1,8 ha, then the projected slope of the backfilled area will not exceed 5^0. 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 backfilling of ravines, the soil profile is transformed, and new technogenic soils are formed on the planned surface. Therefore, before starting work on backfilling ravines, it is necessary to selectively remove and store the fertile layer of demolished ravine soils. This can be done in the following cases:

1. If the underlying soil is not eroded or slightly eroded. The content of humus in the plow horizon exceeds 1%.

2. If the number of gully peaks does not exceed 3-4 pcs/ha, and their occupied area is less than 20% of the territory of the gully area.

3. If the steepness of the ravine slope is not more than 10^0 and allows the free movement of mechanisms.

If the conditions do not correspond to at least one of these indicators, then earthing is not advisable. The depth of the surface layer carried by the soil of the transplant depends on the thickness of the humus horizon, in light gray soils it is usually 10-15, typical gray soils 17-20, dark gray soils 20-25, meadow soils 25-30 cm, weakly confluent varieties 20-35 cm and strongly confluent more than 35 cm. Therefore, before carrying out land reclamation work, a detailed soil survey of the surrounding ravine territories is required in order to establish the transplant's suitability.

Cutting off the fertile layer of ravine soils and storing it at a distance of up to 50 m must be done with bulldozers, and more than 50 m with a scraper. Then the ravine is filled with bare soil to the designed slope and the surface is carefully planned. After mechanical compaction, the stored humus layer of soil is evenly applied to the planned surface. In the ravine areas of the republic, the soil cover is predominantly (more than 80%) represented by medium and strongly eroded soils. Therefore, the removal, transportation and application of the fertile soil layer on the

planned ravine lands can be carried out from other sites. In this case, the transplant (applied layer) should have, along with an increased content of the organic part of the soil, favorable physicochemical properties.

Methods for the development of ravine areas. After calculating the amount of equipment needed and the days of backfilling of ravine lands, it is necessary to clarify the nearby soil pit, the distance of the object and the volume of mass in m^3. Near the ravine in the ravine areas, 30-40 cm deep fertile soil is cut, and collapses close to the ravine. The morphometric data of the ravine are measured, the upper part of the graft is covered with soil of 60 cm layer. 30 cm layer is filled with animal waste or compost from livestock farms. It is soaked by sprinkling to a moisture content of 70% of the soil, after which it is compacted with a bulldozer. Up to 30 cm of soil cover is covered with a fertile layer located near the ravine. It is compacted with a bulldozer and equal to the slope - this is how irrigation occurs.

The best period for the development of ravines by backfilling for the conditions of Uzbekistan is October-November. During this period of the year, the fields are freed from crops, the surface is naturally moistened and the entire area is uniformly compacted.

The use of reclamation anti-ravine methods in the medium and heavily ravine territories of the Namangan adyrs is ineffective due to their erosional dissection.

Therefore, one of the alternative methods of agricultural use of ravine lands is the radical amelioration 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.

REFERENCES

1. Dadakhodzhaev A, Mamazhanov M.M. Mapping manifestations of the growth and development of ravines according to the thickness and density of adyrs of the Republic of Uzbekistan. Collection of articles of the International scientific-practical conference. February 13, 2016 p 4-7
2. Dadakhodzhaev A, Khaydarov Sh.E. Scientific basis for the control of ravine erosion in Namangan adyrs, Kirov city. Collection of articles of the International scientific-practical conference. February 23, 2016 p 16-17
3. Dadakhozhaev A, Mamadzhanov M. Primary reclamation of the ravine lands of the Namangan adyrs. Managing editor 2016 p-6