



## CURRENT ANALYTICAL STATE OF MELOIRATIVE CONDITION OF IRRIGATED SOILS OF GIJDUVAN DISTRICT OF BUKHARA REGION

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Article history:	Abstract:
<b>Received</b> May 11 <sup>th</sup> 2021 <b>Accepted:</b> May 26 <sup>th</sup> 2021 <b>Published:</b> June 30 <sup>th</sup> 2021	The article provides data that systematic work is being carried out to increase soil productivity, preserve and obtain high yields from crops, as well as on the current analytical state of the reclamation state of irrigated soils, called in this connection the "Golden Land Fund" of the republic, high work is being done to improve them.
<b>Keywords:</b> Saline soils, irrigated soil, mechanical composition, type of salinity, relief, reclamation, groundwater, saline washing, drainage.	

In Uzbekistan, the rational use of land resources, including its conservation, soil productivity and crop productivity, is being systematically pursued in all areas. In this regard, work is being carried out at a high level to analyze the reclamation status of irrigated soils, called the "Golden Land Fund", as well as regional, individually targeted reclamation measures to improve them.

Currently, the issues of effective use of soils, which have moved to a high level of our country development and are being introduced into the production of fast technologies in agriculture, are becoming urgent tasks. Along with the preservation of irrigated soils, the use of agro-technical, agro-reclamation and other measures, the improvement of the reclamation and ecological condition, the improvement of the efficiency of the effective use of land resources, the prevention, elimination of the consequences that harm its productivity are priorities today.

The key to increasing soil productivity is knowledge, accounting and forecasting of its reclamation state based on preservation, increase of productivity, protection of agriculture in the republic. When improving the reclamation state of irrigated soils, first of all, they should have a full understanding of the laws of soils origin, their geological-geomorphological, hydrogeological and ecological state, since the study of different soil properties, their cycles of influence and processes of change in soil layers can predict what reclamation changes can occur in the future when affected by irrigation of these soils, due to them, the irrigated water quality, the groundwater level, the mineralization level and their change amplitude will be noted[2,4].

As a result of scientific research, 1 million 743.6 thousand hectares (72.1%) of the total 2 million 418.8 thousand hectares of irrigated land in the country are saline to varying degrees, of these 930 thousand hectares (38,4%) are weak, 550,5 thousand hectares (22,8%) are moderate, 149,5 thousand hectares (6.2%) are strong and 113,6 thousand hectares (4,7%) are very salty.

In Bukhara region (12 districts), 192.8 thousand hectares (85.1%) out of 226.4 thousand hectares of total irrigated land in are saline to varying degrees, of these, 119.9 thousand hectares (52.9%) are weak, 49.2 thousand hectares (21.8%) are moderate, 15.2 thousand hectares (6.7%) are strong and 8476.8 hectares (3,7%) are very salty.

In particular, 13367,7 hectares (66.7%) out of 20032,3 hectares of irrigated land of Gijduvan district, are saline to varying degrees, of these 1041,0 hectares (50,1%) are weak, 2485,4 hectares (21,4%) are moderate, 82,7 hectares (2,9%) are strong and 258,7 hectares (1,3%) are very salty [5].

Bukhara region consists of flat lands, from north to south the height level decreases. The territories of the region according to their organic structure and relief, climatic conditions and the soil-plant world are not very different from each other. The undulating wide plains of the territories are composed of various complex deposits of the ancient quaternary period. In the desert zone of the regions, desert meadows and meadow-desert soils are scattered, and in their deep layers are covered with quaternary sediments and humus deposits.

The complex organic, geomorphologic-lithologic, soil-climatic conditions of the region have created a very complex hydrogeologic situation, which is reflected in the regime and balance of surface and groundwater.

Irrigation of lands in the main areas of the natural and artificial low-lying part of the plain in the region and a number of other factors allow groundwater to rise to the surface, this in turn leads to salt accumulation and re-salinization in the soil. Periodic fluctuations in groundwater levels change with the seasons, leading to complex hydrogeologic processes in the region. In the northern zones of the region, the groundwater level is observed at 2-3 m depth and more, while in the main areas of the plain it is observed at 1,5-2,0 m and 0,5-1,0 m on the 1st floodplain terrace of Zarafshan river. Especially in the lowlands of the plains, as a result of almost no groundwater flow, the amount of easily soluble salts in the water increases and the primary chloride-sulfate salinity in soils and groundwater is becoming the type of chloride salinity.

The mineralization level of groundwater is different in different parts; in the northern plains is 1-2 g/l, in the middle of the region is 2-3 g/l, in the lowlands are 3-5 g/l and more. In particular, the average salinity of groundwater in the region is 1,5-2 g/l.

In irrigated lands, as the groundwater approaches the surface, the hydromorphic (meadow) soils area evolves and the salinization process intensifies. The problem of preventing these cases and stopping the negative processes remains a key issue. The territory of the region consists of various rocks scattered in organic periods, forming soil, from small (weak) alluvial rocks. The main part of the area is composed of sand-mixed layers of alluvial deposits of sands with sandy and loamy layers on top of the parent rocks that form the soil.

The main factors influencing the salinity and secondary salinity of irrigated soils in the region are the regular irrigation and the movement of groundwater. In most cases, excess water is used for irrigation, the movement of groundwater is not controlled, if the irrigation process consumes water depending on the soil type, its mechanical composition and other properties, and if the groundwater management is systematically established, soils salinization will not occur on a large scale in the districts [6].

The saline washing effectiveness depends on soil (mechanical composition, water-physical properties, salinity, salinity type), hydrogeological (depth of groundwater and runoff conditions), climate (amount of precipitation, air temperature), soil erosion and depending on agrotechnical conditions.

In soils with a light mechanical composition, the salts are washed away quickly even when less water is used. Conversely, when the mechanical composition is heavy, compacted, and the soil contains waterproof gypsum or carbonate layers, the salts are washed away very little and for a long time. Compared to soils with light mechanical composition, heavy soils have less mechanical content and less salt and are harder to wash away. When there is a sand layer under the soil, it is easier to wash the brine, and when there is a dense layer of clay, it is difficult.

On soils with gypsum or gypsum layers, or compacted soils, the washing of the salt slows down. When softening such layers of soils with special soft tools, the efficiency of washing salt will increase significantly. Granular loamy soils and soils which contain a lot of sand, light and medium sand, are quickly washed and desalinated with low water consumption. When there are a lot of large cracks, pits, pore in the soil, it does not wash well, because in such places water is absorbed through these cracks, pits, pores. [1]

The saline washing effectiveness also depends on the aggregate condition of the soil and its moisture content. Salt is washed less from dry soils than wet soils. The smaller the soil aggregates, the easier the salt is washed away.

The efficiency of salt washing in water will also depend on the salinity level of the soil. The more salt in the soil, the harder is to wash. The efficiency of washing salt is also equal to the salt content of the soil. If there are many chlorides in the soil, they are easily washed, since the chloride salts are easily dissolved in water.

In the sulfate serum type of salts, chloride salinity is washed less than in soils. Sulfates are less soluble in water, especially at low temperatures.

When the groundwater level is 1,5-3,0 m, the desalination process of soils with heavy mechanical composition is also very slow. This is because when the groundwater table is at the surface, the free capacity of the soil is very small, it holds very little water, and the groundwater flow rate is very slow. Under such conditions, saline leaching is also more difficult, as the soil is strongly saturated with capillary moisture. As a result of irrigating lands with groundwater surface, the soil becomes saline again during the period from first irrigation to the second irrigation and after irrigation, the soil dries up again. Especially when the soil is not deeply desalinated, the soil becomes saline again very quickly when the groundwater level slowly decreases during the saline wash [3].

The effectiveness of salt washing also depends on the soil erosion degree. The more saline the area to be drained, the better the soil will be desalinated by the salt wash. Under saline conditions, the salinity wash rate may be the same or less water may be used than under non-saline conditions, but the deeper layers of soil are also better saline.

In low-salinity soils with light mechanical content, it is advisable to carry out the current saline washing in early spring (March), in moderately and strongly saline soils, and in soils with heavy mechanical content in October, December, January and February. When washing with salt in the fall and winter, 2/3 of the total salinity wash is done until a strong cold snap, and the remaining 1/3 is done in the spring [7].

In the implementation of measures aimed at improving the irrigated lands reclamation, it is important, first of all, the correct selection of soils in need of reclamation, a comprehensive approach to this issue from the following scientific and practical aspects is needed.

It is necessary to carry out timely and high-quality soil salinization works, which are considered reclamation. Carry out "Soil salinity map" for each region, taking into account water resources and local soil climatic conditions in accordance with the recommendations developed for salinization;

Loss of seasonal accumulated salts in the soil root layer is achieved only by saline leaching. In some cases, this has been achieved by providing high rates of irrigation water on ancient irrigated lands. If the amount of irrigation water in saline areas is reduced, then the plants will get the necessary moisture from groundwater reserves. Groundwater consumption by plants depends on their location depth, the mineralization degree and the irrigation water quantity. The higher the irrigation water standards, the less groundwater the plants consume, and the less salt accumulate in the root layer of the soil during the season. Among the many factors that contribute to soil salinity, special attention should be paid to the concepts of "critical depth" and "critical mineralization" of groundwater. In dry and hot climates, irrigated lands have several tens of times more evaporation from the surface than atmospheric precipitation, the salinization process is inevitable, and the main reclamation measures should be aimed at preventing this negative process and reducing its impact on plants; in order to prevent the salt accumulation in secondary soils and secondary salinization processes in irrigated soils and to reduce their impact, the main factors are the effective operation of the drainage system, quality leveling and salinization. In this regard, the smooth operation of the drainage system, ensuring the groundwater flow, quality leveling of fields, timely conduct of saline leaching activities, their timing and norms, adherence to saline leaching techniques and technologies will be the basis for a high result. In areas with strong dust storms with a frequency of 30-35 m/s and more in protecting crops from wind and combating erosions it is necessary to establish rows of protected forests, such as high-growing, coastal-tolerant, saline and oak, black pine, pine, date fruit, sycamore, acacia, thorny tree, willow-poplar, salt cedar, birch, wild date fruit, elm, chestnut which can grow even in areas with rising groundwater. These ichotadors block winds and dry wind, reduce their speed and influence, control the temperature of air inflow near the soil surface, keep humidity on stable criteria, and do not negatively affect the properties of the soil, which ultimately prevents the intensification of soil drying.

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