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The formation of saline lands and methods of salt washing of saline lands

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Annotation: In this article, we talked about the methods of washing soil salts, taking into account that the demand for fertile soils has increased due to the increased salinity of the soil, and many fertile lands are becoming unusable due to salinity.

Keywords; gradual process, ecological problem, ecological crisis, soil compaction, ecological ignorance, environment, animal pasture, chemical fertilizers.

In the current period of accelerated scientific and technical development, in the process of coordinating and harmonizing the interaction and connection between nature and society, such ecological problems have arisen that they are interpreted as an urgent problem of our time.

Although natural processes are the main cause of the ecological crisis, they were caused by the anthropogenic factor - human activity. Therefore, it is not appropriate to assess this crisis as a purely natural-historical, gradual process or to attribute it to the lack of water. If this problem is analyzed on the basis of the dialectical unity of social, economic, political and cultural knowledge, then an important aspect of it that has not been noticed so far is that the necessary environmental knowledge has not been formed in young people. From this point of view, it would be correct to assess the environmental crisis in our country as a tragedy of "ecological ignorance". After all, the lifestyle of any people is a good indicator of ecological knowledge. Acceleration of socio-economic development, improvement of people's well-being and standard of living in the current market conditions largely depends on the efficiency of agricultural production.

However, little thought has been given to the potential negative effects of technology abuse and technology disruption on the environment. As a result, agriculture has become a factor that has a strong impact on the environment, which causes ecological crises in the nature of our country:

- agro-biocenoses artificially created by humans have been replaced by natural ecosystems and biocenoses, which emerged in the process of long gradual development as a result of the increase of arable land area and the expansion of livestock pastures;
- due to development of protected lands, destruction of forests, unscientific drying of lakes, a sharp decrease in humidity is observed;
- due to improper agrotechnical and meliorative treatment of land, destruction of the natural soil layer, the composition of the soil has changed, its productivity has decreased, it has allowed the decrease of moisture from water bodies, the increase of dust particles in the air;
- non-observance of crop irrigation methods and norms led to excessive wetting and secondary salinization of fields, water wastage;
- excessive use of mineral fertilizers and chemical agents and non-compliance with the rules of their use, pollution of the environment with various substances foreign to nature caused the disruption of life activities of living beings;
- the construction of many large livestock and poultry facilities increased the possibility of environmental pollution with production waste;
- the unreasonable use of agricultural machinery and vehicles has led to an increase in soil density, a violation of moisture retention and water permeability properties, and pollution of the environment with fuel and oil residues, toxic gases.

It is possible to positively solve the problems of environmental protection only when agricultural production is combined with the following main directions of rational use of nature:

- organizing and improving activities of agricultural industries taking into account the impact of production on the environment;

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- efficient and economical use of land-water, plant and animal resources, local and chemical fertilizers and fuel-lubricants;
- protection of local flora and fauna as the hereditary wealth of nature, and ecosystems as a component of the biosphere;
- strict consideration of environmental factors and nature protection measures in farming and animal husbandry operations;
- implementation of reclamation works in accordance with the requirements of nature protection and expansion of the area of forest plantations;
- restoration of lands damaged by industry, transport and road construction and their use in agriculture;
- improvement of land reclamation of pastures and natural fodder areas;
- transition to low-waste and zero-waste technology in the processing of agricultural products;
- reduction of environmental pollution based on improvement of methods of using mineral fertilizers and chemicals;
- constant monitoring of soil, water, air quality and condition.

It has become a tradition to organize the collection of "secondary raw materials" in secondary schools. Pupils actively participated in the collection of waste paper and rags, collection and propagation of valuable medicinal plants, and collection of ferrous and non-ferrous metals, which allowed to save thousands of hectares of forest resources.

Based on our work experience below, the mass of water that evaporates through the soil depends primarily on the saturation of the layer with water vapor and its capillary properties. The more moist air in the soil layers and the finer the soil structure, the faster the evaporation process. Dense soil evaporates more water than loosened soil. Therefore, in order to preserve moisture in the soil longer after irrigation, it is necessary to loosen it in time, that is, to cultivate it.

Water supply, especially irrigation, can have unfortunate consequences if water is not used sparingly, namely salinity. The essence of this phenomenon is that in arid climates, groundwater contains large amounts of water-soluble sulfate and hydrochloric acid salts. When the cultivated area is fertilized and irrigated, the level of mineralized groundwater rises and the salts dissolved in the water rise to the upper layer of the soil.

When tilling the soil, the capillary connection between the top layer and the bottom layer is broken, thereby reducing evaporation.

The rate of evaporation is greatly influenced by the wind, its direction and strength. More winds accelerate evaporation, while moist winds decrease evaporation. In addition, the amount of water evaporation from the soil is affected by the crops planted, their density and agrotechnics. Evaporation of water in the soil depends on the movement of moisture from the lower layer to the upper layer, ascent, relative humidity of the air, soil temperature, wind speed and topography.

In the formation of saline lands, mineralized seeps located close to the earth's surface or once on the surface, and various salts that dissolve in water, and finally, salt dust blown by the wind from the sea coast, play the role of the main source. These dissolved salts include calcium chloride, magnesium chloride, magnesium sulfate, table salt, sodium sulfate, sodium carbonate, and others.

Dissolved salts in water, especially chloride salts, poison plants. In addition, salts increase the osmotic pressure of the soil solution. Thus, it creates the phenomenon of physiological dryness of the soil. The essence of this phenomenon is that just as plants are thirsty for lack of water when there is a lack of moisture in the soil, so they are thirsty for a lack of water when there are many salts in the soil.

There are different methods of leaching salt from saline lands. In all conditions, salt washing is useful when the water level is at its lowest. When the soil salt is washed away, the land softens and is plowed well. Depending on the salinity of the soil, the land is washed with salt before plowing and after plowing. In this case, weak and moderately saline soils are washed before plowing, and those with strong salinity are washed after autumn plowing.

Water standards for soil salt washing are determined depending on the salinity level of the land, the depth of seepage water, and the mechanical composition of the soil and other properties. The earlier the saline wash is started, the better the result. If the soil salt is washed several times, it is necessary to give the next water as soon as the water is absorbed into the ground.

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Water evaporation should be reduced to prevent soil salinization. In order to reduce water evaporation, it is necessary to cover the surface of the earth, that is, to prevent moisture from rising to the surface of the soil through capillaries, to reduce the surface of evaporation, to install barriers against the wind and to adjust the temperature of the air and soil, and not to work the land with poor quality.

Another way to combat salinity is to plant trees. Trees planted in saline soils should be drought and cold tolerant, fast growing, valuable timber or fruit producing and attractive trees that can tolerate soil salinity. Such trees include white willow, Eastern sycamore, sycamore, as well as fruit trees such as apricot, pear, gooseberry, plum, mulberry, and white mulberry. Violation of the ecological balance in the regions is observed in practice as a direct result of the interaction of natural and anthropogenic factors. The ecological balance is changing at an unprecedented rate in the new stage of current scientific and technical development. The main reason for this is the excessive use of natural resources and, as a result, not using them rationally and in accordance with the needs, allowing neglect, nature protection, not solving problems in a scientific way, a lot of pollution of the atmosphere and water bodies, soil impoverishment, and the decrease of flora and fauna. is related to the fact that people's love for nature is cooling down and the activation of other factors.

Environmental crisis is becoming a terrible reality in our life and it is causing great concern among the general public day by day. Therefore, one of the urgent problems of today is to educate students with deep ecological education and upbringing.

During our observations, we were convinced that in the process of educational work, the use of wonderful narratives and wise words, which express the attitude of the Uzbek people to the world of land, water, flora and fauna, formed over thousands of years, was neglected. After all, our ancestors used land and water resources according to their needs. Especially those who have a frugal attitude towards water, spitting, throwing something into it and polluting it, improper use of water were considered grave and unforgivable sins. Now the restoration of these traditions among our generations, their effective use in the process of education depends on the level of the student's knowledge and the extent to which environmental knowledge is formed in his personality.

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