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SOIL PROTECTION MEASURES
(In the example of "Yakub" farm, Sh. Rashidov district, Jizzakh region)

Berdieva Dildora Shodiyrovna
Independent Researcher
Jizzakh Polytechnic Institute, Jizzakh City, I.Karimov Street 4

Mirzabekova Maftuna Abdujalil kizi
Teacher Jizzakh Polytechnic Institute, Jizzakh city, I.Karimov Street 4

Abstract

Development of solutions to problems related to consistent acceleration of agricultural production, rational use of land fund, productivity of each irrigated hectare, and its economic efficiency is of great importance. The land intensively used in agriculture in Uzbekistan is mainly irrigated land, equal to 4.28 million hectares. These lands are truly the Golden Fund of our Republic and more than 95 percent of gross agricultural products are grown on them [Valkov V.F. 1986: 1].

In this regard, it is an important task of agricultural experts to maintain and regularly increase soil fertility. It is not for nothing that the state allocates large amounts of money to the improvement of land reclamation, restoration of soil fertility, construction of land reclamation systems, and holding ceremonies related to their use.

Unfortunately, today the soil layer is eroding, good fertile lands are decreasing, and they are rapidly deteriorating. Over the course of history, about a billion hectares of land have been lost to mankind (cities, settlements, buildings, roads, erosion, salt water, evaporation, etc.). Currently, agricultural crops are planted on 1.5 billion hectares of land all over the planet. According to the received data, 6-7 million hectares of land are lost every year in the world as mentioned above [Abdullaev Kh.A. 1989: 3].

The problem of protecting the soil from erosion is an urgent problem for many countries located in the arid climate region of the world, including the territory of Uzbekistan. Because the land areas that have been eroded in the republic are 2 mln. about a hectare or more than 40% of the total arable land.

The classification of eroded soils in Uzbekistan has been developed and a map of the lands at risk of erosion in the republic has been drawn up. Under the influence of the erosion process, slightly eroded, moderately eroded, strongly eroded, soil and sediment, that is, washed-out soils are formed, which are the thickness of the soil layer, humus, stock and composition of nutrient elements (micro and macro elements), amount of microorganisms and quality, chemical and physical properties, bioenergetic indicators indicate that productivity levels are different.

It is known that 100-150 tons per hectare and more, and even up to 500 tons per hectare can be washed away by irrigation erosion. Together with this soil, 500-800 kg of humus, 100-120 kg of nitrogen, 75-100 kg of phosphorus, and even more nutrients can be lost per hectare per year. It should be noted that erosion processes have a bad effect on the soil ecosystem, negatively affecting the amount of solar energy used in biomass and

reducing it. As a result of erosion processes, 30-50 percent or more of the solar energy absorbed in phytomass, humus and soil microorganisms is lost, taking into account that the intensity of biological and soil processes occurring in the soil is mainly related to the reserves of solar energy and the changes in the reflected light, the scale of damage caused to the ecosystem by erosion can be imagined [Zokirov T.S. 1991: 2].

In our country, every year, prevention of soil erosion and fighting against it, increasing the productivity of soil eroded by water and wind is recognized as an event of state importance. Laws have been passed to protect soil from water and wind erosion. the law defines organizational, agrotechnical, forest melioration, hydrotechnical and other measures to protect the soil from water and wind erosion.

In order to prevent compaction of the subsoil layer of the irrigated soils, it is necessary to widely introduce the technology of planting and minimum tillage. According to the experiments, the density of the soil per cubic centimeter during the growing season is equal to 1.20-1.35 g/cm3 and remains in an optimal condition.

The total land area of Jizzakh region is 21.2 m2, of which the cultivated area is 1254.6 thousand hectares, including irrigated land is about 300 thousand hectares. Soil landscapes are an integral part of highly complex and productive ecosystems. The main reasons are the complexity of the soil formation process, its high dynamics, the characteristics of water supply and the significant influence of abiotic factors (alluvial and tectonic processes), especially the low distribution of elements, on the soil and agrochemical composition of ecosystems.

The main pollutants include pollutants from the combustion of various types of fuels, car emissions, chemical fertilizers and poisons used in agriculture, production waste, as well as F, Cr, V, Mn, Co, which are extremely dangerous for living organisms during operation. Ni, Cu, Zh, As, Mo, Cd, Hg and several other elements were found in the soil [1, 2].

The object of research is the soil of agricultural land of "Yakub" farm in Sh.Rashidov district, Jizzakh region. Three main types of alluvial soils were identified in the studied soils: flat (layered and carbonate), grassy and marshy.

The general forms of elements found in the soils of the studied area differ significantly in terms of composition. The average amount of elements in the soil is as follows: copper - 18.3, zinc - 81.1, cadmium - 1.96, lead - 12, nickel - 28.4, chromium - 105.1, manganese - 749, cobalt - 4.1 mg / kg. The range of variation coefficient of the content of trace elements in the soil is high and from 3 to 86%. Plain soils are characterized by a large amount of mobile copper, zinc, lead and moderate amounts of manganese.

Among bottom soils, salt marshes and meadow-swamp soils are the most diverse, meadow soils are the least common.

The migration of biogenic elements of landscape structures depends primarily on the productivity of the plant community and to a lesser extent on their composition.

Currently, the study of soil pollution usually includes parameters such as sources of soil pollution, sources of pollution in production, industrial enterprises, transport factors and characteristics of the pollution area.

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In such cases, the main source of pollution is usually the impact of the above anthropogenic factors on the territory of industrial enterprises and traffic flow. Such an approach often determines the accuracy of the assessment, since soil contamination, especially in densely populated areas, is the result of many factors that are sometimes overlooked.

These can be industrial and domestic waste, the use of unauthorized chemical fertilizers, various reagents, paints and varnishes, old household appliances, etc., which do not comply with storage standards. If fertile arable land for agricultural purposes is located in the vicinity of large industrial enterprises, the level of soil pollution increases significantly, which is especially dangerous for land used for agricultural production and ancillary farms.

The studies were conducted on heavy granular soils with low water permeability. Scientific and research work was carried out on a plot of land 1400 m long and 600 m wide, located 4 km northwest of the industrial zone of the city of Jizzakh, and the composition of the soil was studied.

Studies have shown that the total amount of mobile forms of ammonium acetate, copper, zinc, cadmium, manganese, chromium and lead have been determined in the study area.

Of the elements studied, lead is the most polluting. Its maximum amount reaches almost 250 mg/kg. Contamination with zinc compounds is generally similar to local lead contamination. The distribution of copper is similar to that of lead and zinc.

It is urgent to study the properties of accumulation of Pb, Zn, Cu pollutants in alluvial soils distributed in the Molguzar foothills. A database of local and regional environmental monitoring of soils in the region was created.

The main characteristics of the soil cover are related to natural factors and are formed as a result of various processes in the river valley, but they undergo significant changes under the influence of increasing anthropogenic load.

It was found that the average total amount of Cu and Pb in arable land in all subtypes of alluvial soils exceeded background values and was independent of soil and plant fertilization systems. In the study area, soil alkalinity rN increased by 3.4 times and Zn by 1.3 times.

* In order to protect the soil, it is necessary to carry out agro-complex measures:

* leveling the land in the form of terraces (supachas), planting fruit trees and vineyards around the fields;

* proper organization of plowing and irrigation of steeply sloped lands;

* planting trees on the edge of the ravines, preventing the expansion of erosion of the ravines, preventing the flow of water from the irrigated fields into the ravines, and building various barriers and water catchment basins;

*To combat wind erosion, the planting of shrub trees, saxophones and surrounding trees on sandy soils is one of the most basic and necessary measures. Also, planting various grasses, making proper use of pastures, creating various fences, in addition,

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creating a thin top layer of sand using chemical substances with gluing properties (oil waste, nerosin, polymers K-4, LATEX SKS-65);

*in order to prevent irrigation erosion, taking into account the physical and chemical properties of the soil and the slope of the land, using the experience of advanced waterers, it is extremely important to plan the amount of water to be poured into the wells for proper irrigation of crops, and to freeze and drain water on lands prone to erosion.

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