INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 5, Issue 7, July - 2024

METHODS FOR SOIL PROTECTION FROM WATER AND WIND EROSION IN JIZZAKH DESERT

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Abstract

As a result of the active influence of man on the soil, a change in its properties, an increase or decrease in fertility, salinity, erosion, degumification, rational use of nonirrigated lalmi lands in farming, its protection requires even more attention than before. It is required to rationally use the land, increase the fertility of the soil, know its quality, economic assessment, protection, plant various plants in a row, scientifically based on the condition of the soil, methods of environmentally "clean" processing of soil, carry out fertilizing at a high level. Increasing the fertility and production capacity of the soil should largely depend on the careful and economical treatment of it, its complex aimed at improving it.

Keywords: soil, fertility, measure, erosion, concentration, fertilizer, microorganism, humus, element.

Introduction

Of great importance is the development of solutions to problems related to the consistent acceleration of agricultural production, the rational use of the land fund, the productivity of each irrigated hectare, and its economic efficiency. The lands intensively used in agriculture in Uzbekistan are mainly irrigated lands, equal to 4.28 million hectares. These lands are truly the golden fund of our republic and more than 95% of the gross agricultural output is grown on them. In this regard, an important task of agricultural specialists is to maintain and systematically increase soil fertility. It is not for nothing that the state allocates large sums of money for improving land reclamation, restoring soil fertility, building reclamation systems, and conducting rituals related to their use. Unfortunately, today the soil layer is

ISSN: 2776-0987 Volume 5, Issue 7, July - 2024

being eroded, good fertile lands are becoming less and less, and they are quickly becoming unusable. Throughout history, humanity has lost about a billion hectares of land (cities, settlements, buildings, roads, erosion, salt water, evaporation, etc.). Currently, 1.5 billion hectares of land are planted with crops around the planet. According to the data received, 6-7 million hectares of land are lost annually in the world, as mentioned above. Considering that two-thirds of the world's population lives in poverty and hunger, and assuming that there is less arable land per inhabitant of the planet than 10-20 years ago increasing soil fertility, doubling and tripling crop yields is an essential part of agriculture in the near future, it is obvious that it should remain the main task. In order to provide legislative support for reforms in the agrarian sector of our country, a number of laws and their projects have been developed. Among them, the Land Code of the Republic of Uzbekistan, the Laws on the Land Cadastre and other laws aimed at developing and regulating land relations on the basis of the law, rational use and protection of land were adopted and approved by the Oliy Majlis. Under the influence of various improperly organized human activities, erosion and pollution of the soil layer occurs. The problem of soil protection from erosion is an urgent problem for many countries located in the arid climatic region of the world, including the territory of Uzbekistan. Since the eroded areas of land in the republic are 2 million square meters. about a hectare or more than 40% of the total arable land. According to our data, on the territory of Uzbekistan there are more than 3 million hectares of drylands suitable for use, of which about 1 million hectares are lowmaintenance and semi-maintained drylands, and more than 70% of these drylands are subject to surface impact. water erosion. A classification of eroded soils of Uzbekistan has been developed and a map of erosion hazardous lands of the republic has been compiled. Under the influence of the erosion process, weakly eroded, medium eroded, strongly eroded soils and sediments are formed, that is, washed away soils, which are the thickness of the soil layer, humus, the supply and composition of nutrients (micro and macro elements), the number of microorganisms and quality, chemical and physical properties, bioenergetic indicators indicate different levels of productivity. It is known that as a result of soil erosion due to irrigation erosion on slopes with a slope of more than 50, up to 100-150 tons per hectare or more, or even up to 500 tons of soil, can be washed away. 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 negative impact on the soil ecosystem, negatively affecting the amount of solar energy used in

ISSN: 2776-0987 Volume 5, Issue 7, July - 2024

biomass and reducing it. As a result of erosion processes, 30-50 percent or more of solar energy is lost, absorbed by phytomass, humus and soil microorganisms, while the intensity of biological and soil processes occurring in the soil is mainly associated with solar energy reserves and changes in the appearance of scattered light can be imagined. the scale of damage caused by erosion to the ecosystem. In our country, every year the prevention and control of soil erosion, increasing the productivity of soils eroded by water and wind is recognized as an event of national importance. Laws have been adopted to protect soil from water and wind erosion. The law defines organizational, agrotechnical, forest reclamation, hydrotechnical and other measures for the protection of soils from water and wind erosion. To protect the soil from erosion, it is necessary to carry out agro-complex measures:

* when farming in mountainous areas, level the land in the form of terraces (supachs), plant fruit trees and vineyards around the fields; * proper organization of transverse plowing and irrigation work on steeply sloping lands; * landscaping the edges of ravines, preventing the expansion of erosion of ravines, preventing the flow of water from irrigated fields into ravines, building various barriers and water collectors; * to combat wind erosion, the most basic and necessary measures are planting shrubs, saxovuli on sandy soils and hedges. As well as planting various grasses, rational use of pastures, creating various fences, as well as creating a thin top layer of sand using chemicals with adhesive properties (oil waste, nerosin, K-4 polymers, SKS-65 LATEX); * in order to prevent irrigation erosion, taking into account the physical and chemical properties of the soil and the slope of the site, using the experience of advanced irrigators, it is extremely important to plan the amount of water supplied to wells for proper irrigation of crops, as well as freezing and diversion of water on lands prone to erosion. To prevent the compaction of the subsoil layer of irrigated soils, it is necessary to widely introduce the technology of sowing and minimum tillage. Experience has shown that soil density per cubic centimeter during the growing season is 1.20-1.35 g/cm3 and is maintained in an optimal state. The correct and rational use of any means of production largely depends on how deeply and comprehensively its important features are studied. As a result of active human impact on the soil, changes in its properties, increase or decrease in productivity, salinization, erosion, dehumification, rational use of rainfed lands in agriculture and their protection require more attention than before. It is necessary to use the land wisely, increase the fertility of the soil, know its quality, economic value and protection, plant various plants on a scientific basis according to the state of the soil, apply environmentally "clean" methods of tillage.

ISSN: 2776-0987 Volume 5, Issue 7, July - 2024

, and carry out fertilization at a high level. Increasing the productivity and productive capacity of the soil should largely depend on the careful and economical handling of it, a complex aimed at improving it. Currently, the problem of soil pollution with heavy metals in technogenic and agricultural industries is acute. Heavy metals occupy one of the leading places among environmental pollutants. Many representatives of this group of substances, such as lead, copper, zinc, cadmium, even in very small quantities, can cause immunological, oncological and other types of diseases. As a result of studies conducted by scientists from different countries, it has been proven that about 70 percent of heavy metals enter the human body with food. Today, Sh. Rashidovsky district is one of the regions where the quality of agricultural land has declined, the main lands of the district are considered close to the city center, the soil is polluted with various pollutants by industrial enterprises, the balance of nature is disturbed, and the ecological environment is considered very serious. Human use of chemicals in economic activities and their inclusion in the cycle of anthropogenic transformations in the environment is constantly growing. According to GOST 17.4.1.0283 pollutants in the soil are divided into three classes: Class I (high risk) - As, Cd, Hg, Se, Pb, F, benzo (a) pyrene, Zn; Class II (moderately dangerous) - B, Co, Ni, Mo, Cu, Sb, Cr; Class III (low risk) - Ba, V, W, Mn, Sr, acetophenone. Heavy metals far outperform common pollutants such as carbon dioxide and sulfur and are second only to pesticides in terms of pollution. In the future, they may turn out to be more dangerous than NPP and MSW emissions. Soil contamination with heavy metals is associated with their widespread use in industrial production. Due to the imperfection of purification systems, heavy metals enter the environment, including the soil, polluting and poisoning it. Soil is the main environment in which heavy metals accumulate. Heavy metals enter the soil both with atmospheric air and with water. It is a secondary source of pollution of the upper atmosphere of the oceans. Heavy metals can be absorbed through the soil and ingested. According to the results of the monitoring, more than 40 elements of the table of D.I. Mendeleev were found in the soil. Including: V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, Cd, Sn, Hg, Pb, Bi, etc. The most powerful suppliers of metal-containing waste are enterprises for the smelting of non-ferrous metals (aluminum, aluminum oxide, copper-zinc, lead-smelting, nickel, titanium-magnesium, mercury, etc.), as well as enterprises for the processing of nonferrous metals (radio engineering), electrical engineering, instrumentation, galvanic sky, etc.). When determining and assessing the composition of soils in the Sh. Rashidovsky district by ingredients in July 2020, 9 samples were taken from the

ISSN: 2776-0987 Volume 5, Issue 7, July - 2024

sampling point with soil layers of 0-30 cm, 30-50 cm and 50-70 cm. The pH of the soil composition pH was determined in the field. For the analysis of water samples, atomic absorption, gas chromatographic, photometric, photocolorimetric, gravimetric, spectrophotometric, titrimetric and other physicochemical methods were used. The mineralization of water was determined by the gravimetric method. The determination method is based on the gravimetric determination of dissolved substances, which is determined by filtering the sample to a constant weight, evaporating the residue and drying at 150°C for weakly mineral waters (105-110°C) and highly mineralized waters. Ammonium ions were determined photometrically. The main method for determining ammonium nitrogen is the calorimetric method using Nessler's reagent.

Heavy metals were determined by photometric and photocolorimetric methods. For example, a yellow complex compound in a ferric iron medium was determined by the hydroxide formation reaction, forming a colored complex compound in the presence of copper xylenol. Based on the results of field and laboratory studies and observations, the sources and level of soil pollution in the Sh. Rashidovsky district were determined. Conclusions. Thus, the analysis of soil contamination with heavy metals at the landfill in Sh. Rashidovsky district shows that most of the pollutants were found in soil samples. Analysis of soil pollution with heavy metals in the region shows that the content of chromium, manganese, cobalt, nickel, copper, silver, zinc and other elements slightly exceeds the maximum allowable concentrations for soils. The concentration of all other heavy metals does not exceed the MPC, which confirms the conclusions made in the review part of the work about the low information content of heavy metals in environmental monitoring.

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