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PHYTOPLANKTON DEVELOPMENT DEPENDING ON THE SEASON OF THE YEAR IN THE PONDS OF TREATMENT FACILITIES

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Abstract
This article discusses the ecological- floral analysis of natural population of algal ponds used as biological ponds - reservoirs, clarifiers.

Keywords: Pond, algae, flora, al′goflora, saprobity, systematic, filtering, season.

Introduction

The algaeflora of individual artificial reservoirs of Central Asia, the composition of phytoplankton, khauz, canals in the vicinity of Old Bukhara were originally set out in the works of A.I. Kiselev and 600 species of algae belonging to the surveyed reservoirs were indicated. E.I. Kiseleva studied the vegetation of water bodies in the vicinity of Old Bukhara. According to Kiselev, the following species of algae are mainly characteristic of the reservoirs of Bukhara: Pediastrum duplex, P. simplex, P. clatharatum, Tetraedron costatum var. palatinum, T. limneticum, T. lobatum, T. trigonum, Kirchneriella botryoides, Ankistrodesmus falcatus, A. longissimus, Scenedesmus opoliensis, S. quadricauda, Crucigenia emarginata, C. rectangularis, Coelastrum microsporum, C. reticultum, Selenastrum gracile, Actinastrum hantzschii, Dictyosphaerium pulchellum.

At the present stage, industrial methods such as chemical, physicochemical are widely used for water purification. Most of these traditional methods, while being sufficiently effective, are also associated with the need to solve a number of problems, such as high energy costs, increased requirements for equipment, complexity in operation, additional chemical treatments, etc., which leads to a significant increase in the cost of water treatment. Therefore, a biological method based on the use of natural mechanisms for the elimination of regulated ingredients may also be more promising in water purification from pollution. This method combines the cleaning abilities of soils, communities of micro and macrophytes, microflora and fauna. There is a very noticeable interest in the purposeful use of aquatic plants and algae in improving the quality of water in water bodies.

The main factor affecting the change in the quality indicator of water bodies is municipal wastewater. About

200 thousand m3 of wastewater, which will lead to a change in the chemical and biological composition of water. At the same time, there is no complete picture of the distribution of algae and their role in determining the ecological and sanitary condition of the biological ponds of the Bukhara treatment plant, which awakened us to the study of these important problems.

Algological material on the species composition of algae in biological ponds of the treatment facilities of Bukhara was obtained. On the basis of the collected algological samples from biological ponds in Bukhara and as a result of treatment, 357 taxa of algae belonging to 5

systematic groups were established: blue-green – 105, diatoms – 100, dinophyte – 10, euglengiaceae – 30, green – 112. The seasonal dynamics of algae development has been determined, indicating that a large number of species have been found in the spring-summer-autumn periods than in winter. In the spring, 234 species of algae were found in the biological ponds of the treatment facilities, 267 in summer, 254 in autumn, and 65 species in winter.

The hydrochemical composition of pond water, which plays a major role in the development and formation of algae flora, has been clarified, as a result it has been established that the pollution of ponds with organic, mineral and toxigenic substances increases from municipal and industrial effluents. This changes the species composition of water. An ecological and sanitary assessment of biological ponds based on the species composition of algae is given.

The content of dissolved oxygen in water is one of the important factors of water self-purification. As the amount of dissolved oxygen increases, the self-purification process accelerates. In the winter period of the absence of mass development of phytoplankton in biological ponds, the content of organic and mineral substances in the water is high. The value of BOD5 in wastewater at the inflow of bioponds is 72.0-78.3 mg O2/l, and at the outlet from bioponds is 53.0-68.3 mg O2/l. The amount of ammonia, nitrites and nitrates is high.

In the spring, with an increase in water temperature and solar energy, intensive development of phytoplankton is observed in biological ponds. As microalgae develop, the amount of dissolved oxygen in the water increases to 3.0-4.0 mg/l. The amount of organic substances according to BOD5 decreases to 44.0-50.8 mg O2/l. There is a decrease in the amount of mineral elements. In summer, the water temperature rises to 25-30 ºC. Under such temperature conditions and sunlight, a massive development of phytoplankton is observed in all bioponds. In the summer, there is a "bloom of water" in biological ponds. This is a positive phenomenon for biological ponds (for wastewater treatment). With the mass development of algae in wastewater, the amount of dissolved oxygen increases to 9-10 mg/l. The value of BOD5 decreases to 11.4-15.2 mg O2/l. The amount of ammonia, nitrites and nitrates is not observed, since algae absorb them for growth and development.

In the autumn period, when the water temperature drops, the self-purification processes decrease in comparison with the summer ones. In the autumn period of the year, the amount of dissolved oxygen in the water in biological ponds increases to 3.0-4.0 mg/l. At the same time, the content of organic substances according to BOD5 decreases to 31.3-42.4 mg O2/l.

Phytoplankton of bioponds is one of the most important producers of organic matter, on the basis of which the subsequent links of organic life develop. The role of phytoplankton in general, the circulation of consumer substances, abundance, distribution in the water body, seasonal periodicity of development and their production capabilities.

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