ESTIMATION OF WATER QUALITY IN GHIDIGHICI AND DĂNCENI LAKES IN ORDER TO USE THEM FOR IRRIGATION

Viorica GLADCHI, Vladislav BLONSCHI,

Moldova State University, ***Moldova***

The Ghidighici and Dănceni reservoirs are part of the surface water bodies in the Dniester river basin, which is a main water artery for the Republic of Moldova. The Ghidighici accumulation lake is formed on the Bâc river, which flows into the Dniester river, and the Dănceni accumulation lake is formed on the Işnovăţ river, a tributary of the Bâc river. Both lakes are used for recreation purposes, but also for uncontrolled and unauthorized irrigation of soils. That is why it is important to know the chemical composition of the waters in these lakes and to estimate these waters as sources of water for irrigation.

In order to estimate the water quality from Ghidighici and Dănceni lakes in order to use them for irrigation, traditional methods were used. For the calculation of the respective coefficients, the average values of the content of the main ions during the years 2015-2020 were used.

The danger of soil salinization was estimated by the average value of mineralization and the total hardness of the water. Hazards of alkalinization, secondary soil alkalinization, soil alkalinization due to magnesium and sodium ions were estimated by calculating the ratios of the multiannual average values between $(Na^{+}+K^{+})/Ca^{2+}+Mg^{2+}$(mmol/dm^3); $(Na^{+}+K^{+})/\sum$cations (mmol/dm^3); Sodium Absorption Ratio (SAR=$(Na^{+}+K^{+})/\sqrt{(Ca^{2+}+Mg^{2+}/2)}$); $Na^{+}/\sum$cations (mmol/dm^3 %); Mg^{2+} %·$\sum$cations (mmol/dm^3%).

Calculations show that the waters of Lake Ghidighici have increased alkalinity, excessive mineralization, increased content of sodium ions, which can contribute to salinization and alkalization of soils. The use of these waters for irrigation purposes is limited.

Calculations show that the waters of Lake Danceni have increased alkalinity, excessive mineralization, increased content of sodium ions, which can contribute to salinization and alkalization of soils. According to the empirical coefficient of irrigation, this water cannot be used for irrigation purposes.

Acknowledgement: This work has been performed within the State Program of the Republic of Moldova (2020-2023), Project Nr. 20.80009.5007.27 "Physical-Chemical Mechanisms of the Redox Processes with Electron Transfer in Vital, Technological and Environmental Systems".