

## DEPENDENCE OF MICRO- AND MACROELEMENTS EXTRACTION BY CULTURAL PLANTS FROM SPECTRUM OF PHYTOIRRADIATOR

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The paper presents the results of the studies on physical and chemical regularities of accumulation of mineral elements (ME) Mg, Fe, Zn, Mn, Cu, Mo B, K, P, Ca in the leaves and fruits of cucumber, as well as in leaves of tomato and red leaf lettuce grown under a sodium lamp (HPS) and LED (LED) irradiators with different intensity of radiation in the blue, green and red regions of the spectrum. The efficiency of the ME extraction mechanism was evaluated using the extraction coefficient, expressed as the ratio of the ME content in the leaves to their concentration in the nutrient solution. The efficiency of extraction of microelements largely depends on the type of plant, and macroelements – on the spectrum of the irradiator. Tomatoes extract microelements 1.5 and 2 times more efficiently than cucumber and lettuce, respectively, regardless of the type of irradiator. The decrease in the efficiency of Zn extraction by lettuce plants under LED irradiation compared to HPS is explained by the shielding of green light by anthocyanins, the biosynthesis of which is activated by the action of blue LED light. The efficiency of the extraction mechanism is associated with the role of ME in plant metabolism, which, as expected, directly depends on the chemical activity and electrical potential of the ME ion. These factors, as well as gravitational, are expressed by the appropriate combination of values of charge, radius, mass, and coordination number of the ME ion. Linear trends in the dependence of the extraction coefficients on the combination confirmed that the extraction mechanism depends on the irradiation spectrum. The extraction efficiency was twice as high in tomatoes as in cucumbers; however, this process has not been shown in lettuce plants.

**Keywords:** cultural plants, mineral elements, irradiators spectra, extraction mechanism.