DETERMINATION OF THE ENERGY INTENSITY OF THE WORK OF OPEN TYPE IRRADIATION INSTALLATION DEPENDING ON THE OPTICAL PARAMETERS OF THE IRRADIATED MEDIUM

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Now irradiating installations are widely used in agriculture for disinfecting and activation of liquids. Since the installation of open-irradiation has established itself as an effective source of ultraviolet radiation, so it became necessary to define the parameters of the light transmission coefficient and the thickness of the irradiated medium for optimum energy consumption of the plant.

The purpose of research - the research of optimal parameters of the light transmission coefficient and the thickness of the irradiated medium and determining the energy intensity of the irradiation installation.

Materials and methods of research. The optical analysis techniques and the interaction of electromagnetic radiation with a liquid medium are used in the work.

The results of research. In known technologies germicidal irradiation solution moves perpendicular to the flow of ultraviolet radiation. As a result of its movement through the region of exposure, the liquid layers are gaining the required dose Q_v^{num}. Because the spatial density of electromagnetic energy with a depth of penetration into the work environment decreases exponentially, in order to achieve the required radiation dose Q_v^{num} in the lower layers to the volume V_u, the entire volume V must be irradiated for a time period t_h.

The modern technology of surface irradiation energy there are two processes: the transfer to the coordinate h and the energy absorption by solution.

To account for differences in the nature of the flow of ultraviolet radiation in the environment of the irradiated volume, enter K factor, which takes into account differences in the amount of ultraviolet flux irradiated environment.

Conclusions

Methods of assessing the energy efficiency of the technological scheme of exposure of open type based on the definition of two parameters: the coefficient of the energy efficiency of energy transfer and the energy efficiency ratio of energy absorption.

The most effective ratio of the light transmission coefficient and the thickness of the irradiated medium $a \cdot h$ in the process flowsheet exposure of open type, which provide the minimum energy consumption mode of work $\eta_E = 4.039$ is achieved with $a \cdot h = 0.6$.