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RESEARCH PHOTOSYNTHESIS EFFICIENCY OF DIFFERENT SOURCES OF OPTICAL RADIATION

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Processes artificial irradiation plants in greenhouses are among the most massive optical electrotechnologies and energy in agriculture. Improving the energy efficiency of these processes is a separate important scientific and economic problem.

Biological process plant consists of two interrelated processes - the material exchange and energy exchange. The main energy sources are photosynthetic plants optical radiation and heat environment, characterized by temperature. Optical radiation does sided effect on plants. From the spectral composition of radiation exposure and the value of alternating periods of exposure and interruptions in irradiation depends on the number and quality of plant products.

In order to find approaches to solving this problem, this paper analyzes the results of optical radiation in plants fotosyntethetic various sources of radiation used in modern greenhouses.

Materials and methods study: comparison of the effectiveness of the spectral composition of artificial sources of radiation exposure fotosyntethetic irradiators used type RSP-SHM-02 with lamps DNaT-250 and DRI-250-5, and LED emitter with red and blue LEDs (in the ratio 3: 2 respectively).

Any exposure mode is supported change the suspension height irradiators relatively middle part of the stem plants and controlled through a digital luxmeter type MS6610 with appropriate filter fotosyntethetic perceiving the light head.

To determine the effective exposure mode was selected five exposure PhAR 40, 50, 60.70, 80 W / m^2 when using discharge lamps and 5, 7.5, 10, 12.5, 15 W / m^2 in the application of LED fixtures, each of which held four times the measurement and calculation. This specific power consumption of the installation of discharge lamps was 312 W / m^2, LED radiator - 18.5 W / m^2. Studies conducted in the early hothouse crops: lettuce and shallots, which is grown on a green pen.

In analisis we can say, that plants grown under sodium lamps with the corrected chromaticity range radiation type DNaT have the greatest yield commodity

mass greens. Plants grown family of LED radiation with the mass of commodities on average 12% less. However, visual inspection of the products shows its more green color and "fleshiness" feathers lettuce and onions, which is indicative of better commercial quality. It should also be noted that the radiation power inputs for LED fixtures in 5 ... 6 times smaller than HID lamps.