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RESULTS OF SIMULATION AND PHYSICAL MODELING OF THE COMPUTERIZED MONITORING AND CONTROL SYSTEM FOR GREENHOUSE MICROCLIMATE PARAMETERS

The research results, obtained in this paper, are devoted to the solution of the current scientific and applied problem concerning limited existing results of studies on the effectiveness of computerized monitoring and controlling the technological processes of protected vegetable cultivation involving simulation modeling methods by means of modern hardware and software. As a result, scientific and practical approaches to the development and research of hardware and software for computerized monitoring and controlling the microclimate parameters of industrial greenhouses have been substantiated, which, in comparison to the existing ones, satisfy the complexity condition. The following stages of system development are taken into account: regression analysis of the sensor conversion characteristics, prototyping of the system, simulation and physical modeling of the microprocessor system, qualitative and quantitative analysis of research results. Also, the developed methods and tools are adaptive to the crops types and periods of their vegetation, in contrast to other existing approaches. The main scientific and practical results of the research are: regression analysis of experimental characteristics of the system measuring channels conversions; development and testing of prototyped, simulation and physical models of a computerized monitoring and control system for the greenhouse microclimate parameters; substantiation of promising directions of further research on hardware and software implementation of the computerized system through its laboratory experimental testing, followed by aggregation and mathematical processing of measurement results.