AUTOMATIZATION ELECTRICAL AND MAGNETIC SYSTEMS DEVELOPMENT STIMULATION PLANTS IN GREENHOUSES

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Grounded Electrical and magnetic systems implications on the development of plants in greenhouse conditions. The recommended design electrical installation with set parameters and functional scheme of automation designed in accordance with the requirements for placing process.

Electric and magnetic fields, plant facilities, automation, monitoring and control parameters, electrical installation.

For effective crop growing greenhouse using Hexadecimal ele-magnetic fields and is necessary to ensure the given parameters fields that allow stimulate processes of plants to increase their productivity.

The design provides installation tension stationary electric and magnetic fields, static electricity and magnetic systems [5]. In the model of installation tension fields provided magnitude of the voltage fed, the distance between the electrodes, the properties of permanent magnets. In previous works [3, 4] studied the working design for impact electric field, which consisted of a system of parallel electrodes with a supply voltage. Were studied processes of tomatoes and cucumbers under static magnetic fields, which give the system permanent magnets. Magnets were manufactured with round electrodes and had no control functions and control panel of the magnetic field.

The purpose of research - to develop electrical installation with set parameters to influence plant facilities and automation control and management of the development of greenhouse crops.

Material and methods research. For the impact of electric and magnetic fields on the basis of theoretical and experimental studies developed electrical installation. The main installation options: on-strip supply, - 0 ... .100; Rated power kVA - 1,2; the number of electrodes □ 18 mm pieces. - 4; number of permanent magnets, pcs. -

2 geometric dimensions - a × b × c = 3600 × 2000 × 18 mm; exposure impact h - 720; characteristics of permanent magnets, magnetic induction, B / Br - 380 mT; coercivity for induction, Hcb - 285 kA / m; coercive force for magnetization, Nsj - 380 kA / m; maximum power, BHmax - 27 kJ / m3; maximum working temperature, Tmax - 200 operating system.

Presented funktsionalnana circuit of electrical and magnetic influence on the development of greenhouse crops. Using this scheme enables visualization parameters of influence, control and regulation of plant development facilities in greenhouse conditions.

Research conducted at the research laboratory. The object of the study was green basil varieties "Badoroy." To identify the impact of the developed compositions on the performance of plants was carried out such research, selection and preparation of samples for analysis in accordance with ISO ISO 874-2002 [12]; determination of the chemical composition was performed by the following methods: solids content by thermogravimetric method of ISO 751: 2004 [10]; of dry soluble substances for refractometric method of ISO 2173: 2007 [11]; chlorophyll content and karatynoyidiv by extraction with acetone pigments with subsequent determination of the optical density [7].

When using standard techniques number of measurements - according to the methodology. When using unconventional methods - number of measurements not less than five reps.

Mathematical processing of the results of research conducted by BA armor [3], VF Moyseychenko [8] and others. and computer programs «Microsoft Office Excel 2007".

In the first approximation of the results shows that for the electric and magnetic fields at maximum intensity values inhibited the synthesis of solids to 0.44%.

Number dry soluble substances is reduced relative to the control variant 1.4 times. Thus, the results indicate a slowing of the metabolism of the nutrients in plants (basil).

In order to prevent action field which inhibits the development of plants was developed functional scheme. Based on the requirements that impose to the process

of growing plants in a greenhouse using additional electric and magnetic fields, and taking into account the decisions of automation developed the functional scheme of automation, which is composed using symbols according to GOST 21.404-85. Marked the site of the measuring transducers and actuators. In addition to the above, the diagram indicated measurement ranges controlled variables in the process. Decryption information - technical support presented.

Substantiation of parameters of the electric and magnetic fields, constructive response elements installation, control and regu-lation to enable further studies to ensure effective conditions of plants.

Conclusions

Depending grounded electric field, magnetic field, exposure time, size of magnetic plates, diameters and distances between the electrodes and plates. The dependences allow for effective modes of greenhouse crops. Also found that the magnitude of the magnetic field more than 4 • H = 102 A / m in the area of the plants is slowing down the development of plants. This decrease in the amount of dry soluble substances in plants.