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THE TEMPERATURE OF THE PLANT AS A PARAMETER FOR REGULATION

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Shown that when grown vegetable production along with the thermal properties of the environment is important information about temperature plants. The analysis of temperature dependence of light plants in the greenhouse.

In the design of stabilizing the temperature conditions in the greenhouse temperature plants can differ significantly from the temperature in the greenhouse and to increase productivity and to quality produktsiyiyi, you should consider fitostan plants.

The purpose of research. Identify factors that affect the temperature condition of plants in the greenhouse.

The main material. We have studied the temperature phytomass in the space of one of the greenhouses at PJSC "Combine" Greenhouse". The measured temperature of the stem, leaf and fruit plants, light and temperature in the greenhouse and plants such fitometrychnyy setting the diameter of the stem.

Measurement of light and temperature and air plants in the greenhouse were held throughout the day in different rows of greenhouses. Illumination with varying from 2,500 to 11,000 lux.

The measurement results, namely the average values of the parameters studied (temperature stems, fruit, leaf plants, air and light at the plant).

Analysis of the materials allows use to describe them linear regression, the coefficients of which are determined by the least squares method (used for normal distribution).

$$y = a + b \cdot x, \quad (1)$$

where a and b - coefficients of linear equations.

Defined coefficients for equations temperature stems, temperature fetus, leaf temperature, temperature near the plants.

Thus the regression equation in explicit form and medium-deviation will be:

- For the temperature of the stem

$$y1(x) = 24.902+2.489\cdot10^{-5}x, \quad (9)$$

$$\delta_1 = 0{,}829\ ^\circ C,$$

- Temperature of the fetus

$$y2(x)=24{,}443+2{,}707\cdot10^{-4}x, \quad (10)$$

$$\delta_2 = 0{,}507\ ^\circ C,$$

- - Temperature of the sheet

$$y3(x)=23{,}665+2{,}155\cdot10^{-5}x, \quad (11)$$

$$\delta_3 = 1{,}188\ ^\circ C,$$

- - For temperatures near the plant

$$y4(x)=32{,}142-2{,}515\cdot10^{-4}x, \quad (12)$$

$$\delta_4 = 1{,}37\ ^\circ C.$$

Graphic representations of temperature dependence of light shown in Fig. (calculated and the results of measurements).

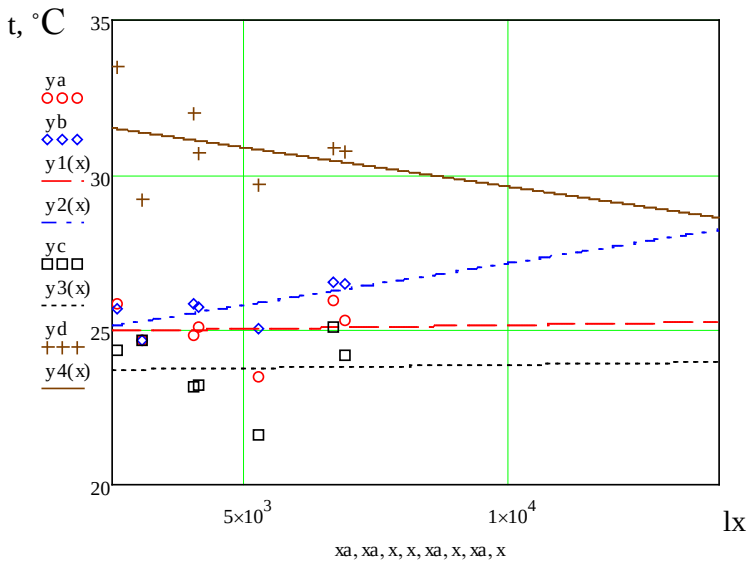

Fig. Temperature Dependence of plants and plants from the air near the light:

temperature stems:ya (◦) - measurement results, y1 (– –) - calculation results; temperature fetus: yb (◇) – measurement results, y2 (–·–) - calculation results; leaf temperature: yc (□) - measurement results, y3 (···) - calculation results; temperature near the plants: yd (+) - measurement results, y4 (–) - calculation results.

To set the temperature dependence of its plants fitometrychnyh parameters measured diameter of the stem of the plant.

Conclusions

The studies found that the temperature of the plant may vary significantly from the air temperature in the greenhouse and it must be considered in the design of stabilizing the temperature conditions in the greenhouse. The measured temperatures plants (fruit, leaf and stem), the air around the plants and light temperatures determined depending on the light in the greenhouse. Mean square error models were thus: δ_1 = 0,829 ºC - when calculating the temperature of the stem; δ_2 = 0,507 ºC - in calculating the temperature of the fetus; δ_3 = 1,188 ºC - in the calculation of leaf temperature; δ_4 = 1,37 ºC - the calculation temperatures near the plant.

The research determined the temperature coefficient of correlation between the stem and its diameter, which is r_{xy} = 0,19, which indicates a weak relationship between these parameters.