ION TRANSPORT IN PLANT CELLS UNDER MAGNETIC FIELD

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The influence of magnetic field on ion transport in plant cells. The dependences of changes in the concentration of ions and electrolytic conductivity cell plants of magnetic field parameters.

The magnetic field, magnetic induction, magnetic field gradient, speed ions, ion concentration, conductivity electrolytic cell.

Pre-sowing seed treatment in a magnetic field makes it possible to increase crop yield and quality, reduce the incidence of plants and reduce storage losses.

For the successful implementation of this technology is necessary to establish the mechanism of action of a magnetic field on seed and tuber crops, justify processing modes that will create equipment that would ensure optimal processing mode.

The purpose of research - the elucidation of the mechanism of the magnetic field to change the concentration of ions in plant cell and its electrolytic conductivity.

Methods of research. Currently, it is believed that the transport of batteries into the cell by two autonomous mechanisms - passive movement of substances for electrochemical gradient and their transfer to the active electrochemical gradient. Because ions have electric charge, their distribution between the cell and the environment is defined as the potential difference and the difference of concentrations. In aggregate, these two values are denoted as electrochemical gradient [1].

Under the influence of diffusion capacity ions begin the orderly movement, creating an electrical current. The amount of power equal to the total charge positively and negatively charged ions that pass through pores in the membrane per unit time.

Seed treatment in the magnetic field increases the current that passes through the cell membrane. The magnitude of this current depends on the diffusion potential gradient and the magnetic induction and velocity of the seeds in a magnetic field [3].

Results. When exposed to a magnetic field changes the cell concentration of mineral elements that come into it. The rate of change will be determined by ion concentration dependence, which follows from the expression /

Thus, the effect of magnetic fields on cell plants growing concentration of mineral substances involved in chemical reactions. This is their acceleration. It also changes the conductivity of electrolytic cells.

The degree of electrolytic dissociation and factor interactions depend on the concentration of the electrolyte [1, 4]. Since the concentration of minerals in small cells, it can be a degree of electrolytic dissociation constant and conductivity coefficient close to unity. Therefore, with sufficient accuracy can assume that the electrolytic conductivity cells

Since the ratio between the concentrations of mineral elements in cells virtually unchanged, the

Thus, under the influence of magnetic field on cell plants growing its electrolytic conductivity, which depends on the concentration of salts and acids, the gradient and the magnetic induction and velocity of the seeds in a magnetic field.

Conclusions

Seed treatment in a magnetic field accelerates transport of ions increases the concentration of mineral elements that come into the cell and its electrolytic conductivity.

It was established that the main operating factors affecting the transport of ions in the cell seed treatment in a magnetic field is the magnetic induction and its gradient and the velocity of the seeds.