EFFECT OF MAGNETIC FIELD ON SEEDS WATER ABSORPTION

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Increasing crop yields and quality of crop production is an important national economic task. For its solution in recent years using various methods electrical pre-treatment of seeds, including one of the most promising is the magnetic treatment.

Experimentally that seed treatment in a magnetic field improves water absorption seeds, providing growth crop yields. However, there is no theoretical justification of this process and not installing operating factors.

The purpose of research - to establish the influence of magnetic field on the characteristics of water absorption seed crops.

Materials and methods research. Analysis of the influence of the magnetic field characteristics of the process of diffusion of water across the cell membrane was performed using the theory of transport of nutrients across the cell membrane and the use of mathematical modeling.

Results. If two solutions of different concentrations are separated by a membrane impermeable to the solute, the concentration equalization is achieved by diffusion of water molecules. First move water molecules in solution A higher concentration of matter, and after reaching steady-state levels set difference of solutions A and B, the value of which is proportional to the difference between the initial concentration of solute (osmotic potential there).

The process of diffusion of water through a membrane is described by Fick. In the steady state after the diffusion of water molecules from solution with a lower concentration in a solution of greater concentration of the substance concentration solutions are aligned.

The molecules of the cell membrane, according to modern concepts of its structure are dipoles. It is known that the magnetic dipole placed in a magnetic

field, a force that is trying to turn it so that the magnetic dipole moment was forwarded with the magnetic field.

This force results in deformation of the cell membrane and the membrane area increases. Thus, the effect of magnetic fields on cell accelerated transport of water into it.

Water the seeds with his treatment in the magnetic field increases. This is because the diffusion coefficient of water increases due to an increase in the size of pores in the membranes and increase the rate of chemical reactions.

Water the seeds and is determined by the gradient magnetic induction and velocity of seeds in a magnetic field.

Conclusions

Under the influence of magnetic field on cell membranes increases their permeability, hence the increase in the diffusion coefficient and diffusion accelerates through the cell membrane molecules and ions.

Increased permeability of cell membranes and the rate of chemical reactions seed treatment in a magnetic field causes an increase in water absorption seeds, which also improves crop yields.