ANALYSIS OF OPERATING CONDITIONS DISINFECTING PROCESSING GRAIN MASS IN THE ELECTRIC FIELD OF HIGH TENSION AC

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The problem of current displacement in the grain mass, as part of operational parameters, the disinfecting treatment in the electric field of high tension AC. Established Mathematical formulas for determining the strength of the field and current density in the grain mass displacement, under the influence of an electric field of high tension and separated from the electrode dielectric plates.

The electric field of high tension, bias current, current density, field strength, grain weight, dielectric constant, electrical conductivity.

When disinfecting treatment of grain in the electric field of high tension when material is handled, stored directly between the high-voltage electrodes, one of the main parameters of the mode of processing is bit processes in air inclusions grain mass. Discharge processes are accompanied by ionization, leading to the passage of electrochemical reactions of ozone. Ozone is known to be one of the strongest natural oxidizers. Oxidation potential of ozone is 2.07 eV (compared to 2.4 eV fluorine and chlorine at 1.7 eV). According to different authors, high bactericidal properties of ozone occur at concentrations of 0.3 ... 0.5 mg / l to 1.2 ... 1.7 mg / l [1, 2, 3]. Processing grain ozonized air with ozone concentration of 2 mg / L and 30 minute exposure, virtually sterilizes grain weight of all species of microorganisms [4].

Technology disinfecting treatment involves the use of an electric field of high tension AC. When using a variable electric fields, unlike regular [5], it is necessary to consider the bias current, which can significantly influence the field distribution in a multilayer dielectric and discharge processes respectively.

At the initial time when there is stress on the electrodes, and the achievement of certain breakdown value in the grain mass displacement current leakage may

occur. When the voltage reaches the breakdown in air inclusions will undergo bit processes, then the current that flows through the grain mass contains two components: bias current and the discharge current. To further develop technologies disinfecting grain processing using electric fields of high intensity AC important to establish dependence to calculate the field strength and current in layers with the initial voltages, ie when the grain mass displacement current flows only.

The aim - to establish dependence to determine the field strength and displacement current density in the grain mass, under the influence of an electric field of high tension AC and separated from the electrode dielectric plates.

Materials and methods research. Grain weight, processed, stored under an electric field of high tension and is separated from the electrode dielectric plates. Therefore, it can be represented as a multilayer dielectric.

Results. Assume that the multilayer dielectric is not perfect, it is electrical characteristics are determined permittivity and electrical conductivity. The physical dimensions of the plates along feel much larger than the distance between the plates when the electric field between them can be considered homogeneous.

The correlation can determine the voltage on the electrodes camera processing necessary to ensure operational parameters processing grain mass. However, given the diversity of seeds, their chaotic relative position in the working area, a wide range of specific conductivity and dielectric constant that can be determined only by experiment indicated value only allow to estimate voltage and bias current for setting operational parameters.

Conclusions

As a result of the passage of current research grounded in the grain mass displacement in disinfecting treatment in the electric field of high tension and its impact on the established regime parameters. Mathematical formulas established in the field intensity and current density layers allow to assess the operational parameters.