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Corona discharge influencing of soil

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Results of experimental studies of the influencing of corona discharge plasma on electrodes in the form of chernozem, red earth and peat are presented. The influence of the corona discharge in the change of electrical conductivity of chernozem, red earth and peat was revealed. In the experiments, corona discharges of positive and negative polarity were used. They were created using a multi-needle upper electrode. The exposure lasted from 10 to 60 minutes at a voltage of about 10 kV and a current of 100 μa. It is shown that when using a corona discharge during processing of a soil, the charge density in the double electric layer of the soil mycelium increases, as evidenced by an increase in the electrical conductivity of soil pastes. The multidirectional nature of the results of processing treated substrates of mineral (chernozem, red earth) and organogenic (peat) nature expressed in a change in acidity indicates a difference in the mechanisms of perception of electric discharges by the soil matrix. Ionization and dissociation of air molecules under the influence of a corona discharge leads to a change (increase) in the electrical conductivity of chernozem, red earth and peat.

Keywords: corona discharge, dispersed materials, chernozem, red soil, soil, processing.

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