THEORETICAL AND METHODICAL FEATURES OF THE HEAT CONDUCTION WITH INFILTRATION PROBLEM

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ABSTRACT: The main purpose of this research - to propose the new solution of the heat conduction with the infiltration process. The tasks of the investigation were: (1) to establish the dependence of temperature of the aeration zone from regime forming factors, (2) introduce the sinusoidal temperature daily dynamics at the soil surface sinusoidally, and (3) justificate of the experimental methods based on these solutions to determine the thermal diffusivity of the soil, taking into account the influence of infiltration. If the temperature of the soil surface during the day (year) can be expressed by a single harmonic, then we can find the value of reducing the amplitude of the diurnal temperature with depth or temperature wave phase lag at different depths. This definition allows for appreciable error due to the fact that the soil temperature is not always varies sinusoidally due to the variability meteorological conditions. The introduction of the second harmonic of a sinusoidal temperature dynamics equation approximates the temperature variation of the active surface of the soil to the real picture. Solution of the heat conduction with infiltration problem is suggested. This solution permits to determine the soil termodiffusivity usind some data of the quotidian variability of soil temperature under infiltration conditions...

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