Abstract:

The aim of this thesis was the infiltration of rainwater through the soil medium containing root systems of various species of forest trees. The aim of the study was to understand the influence of root systems of forest trees on the mechanism of rainwater movement in the soil. The detailed objectives of the study concerned the analysis of the dynamics of the distribution of rainwater supplying soil to the one that, thanks to the force of gravity, infiltrates the soil profile, is retained in the soil by capillary forces or that spreads in the soil as a result of the influence of the root systems present in the soil. The influence of geometric parameters of the roots, their orientation and species on the filtration coefficient of the soil containing the roots was determined. The obtained results confirm the influence of tree root systems on the distribution of water in the soil, and this influence depends on the species (type of the root system) and the physical properties of the soil. The conducted experiments confirmed the influence of the arrangement of the roots and their surface on the infiltration of water through the soil in which the roots are present. The amount of infiltrating water flow loss was most strongly correlated with the total side surface of the roots, their total length and the density of roots in the samples.

Keywords:

root system, roots, filtration coefficient, infiltration, retention