

The impact of biochar amendment on soil water infiltration and evaporation under climate change scenarios

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| Abstract | <p>Biochar is an eco-friendly material that is potentially used in earthworks to prevent stability and serviceability problems under extreme scenarios. This study aims to examine the effects of biochar amended on water infiltration and evaporation under extreme climate. A series of numerical analyzes were conducted to observe the response of pore water pressure (PWP) to extreme climate variation with an application of biochar composition. Moreover, an analysis of variance (ANOVA) has been performed to investigate the effect of biochar on soil water holding capacity at a low suction range. According to the result, biochar amended can maintain the fluctuation of PWP due to wetting and drying processes under extreme climate scenarios. This is due to the fact that the finer particles of biochar may clog large soil pores, reducing the water infiltration rate. Moreover, the addition of biochar can increase water retention capacity at low matric suction ranges, which can prevent flooding during extreme wet conditions. Further to this, the addition of biochar to the soil can maintain PWP fluctuation at the near surface area under extreme climate, preventing soil desiccation cracks.</p> |
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