

Artificial Macropore installation effect on organic matter storage at a degraded land.

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At ill-drained lands, heavy rain would cause erosion which enhances degradation process much faster. According to our previous study, artificial macropore successfully enhanced vertical infiltration and increased organic matter contents. However, there was a concern that infiltrated fresh soil water transported nutrient and oxygen at the same time, resulting decomposition of the organic matter.

In this experiment, we prepared sandy soil column (D=50mm, H=300mm) with Cellulose, for which artificial rainfall of 210mL with nutrients (N,P,K) were applied on the surface soils. Then columns were placed at 30 °C constant temperature room to enhance organic matter decomposition. In order to observe structural difference for carbon storage, three treatments were prepared such as, cultivation, artificial macropore and control, respectively.

Results showed that evaporation was significant for cultivation column, which meant traditional agricultural practice had disadvantage for conservation of soil water conservation. On the other hand, artificial macropore column showed similar evaporation rate for control column in spite of their well-drained structure. Affected by water content, vertical profiles for carbon contents were different for three treatments. Standard deviations for vertical profiles were small for control column, and larger for macropore column and cultivation column.

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