Variability in Soil Infiltration and Water Drop Penetration Time (WDPT) for Soils in Open and under Shrub

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This study examines soil infiltration rates and water repellency (measured as Water Drop Penetration Time, WDPT) across 20 plots characterized by open areas and shrub-dominated soils. WDPT tests were conducted at three depths (surface, 1 cm, and 3 cm), while infiltration rates were assessed at the surface and at 3 cm depth. The results highlight significant variability in soil hydrology between open and shrub-dominated areas. WDPT values for open soils were consistently lower across all depths compared to those under shrubs, where deeper layers exhibited prolonged water repellency. Infiltration rates in shrub-dominated areas were also reduced, with higher rates observed in open areas at the surface and 3 cm depths. These findings underline the influence of vegetation and soil characteristics on hydrological processes, with potential implications for land management and ecosystem restoration in water-limited environments. Further analysis across all plots aims to identify drivers of variability and inform sustainable water resource management strategies.