## IJARSCT



International Journal of Advanced Research in Science, Communication and Technology

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 5, Issue 7, April 2025



## A Comprehensive Study on Moisture-Dependent Dielectric and Material Property Interactions

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**Abstract**: This study investigates the correlation between the dielectric constant and various physical and chemical soil parameters across moisture content levels ranging from 0% to 30%, using a frequency of 9.655 GHz. The results reveal distinct trends and dependencies, highlighting the significance of soil texture, organic matter, and moisture in influencing dielectric behaviour. Strong positive correlations with particle and bulk density suggest physical structure plays a vital role, while elements like EC, Fe, and P show varying influence among chemical parameters

Keywords: Correlation, physical and chemical soil parameters, moisture content

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DOI: 10.48175/IJARSCT-25472



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