Title: **“ Geophysical Characterization of Soil Moisture Variability in Agroforestry Systems using EM38 Measurements”**

In this study, the spatial and temporal variability of soil moisture in agroforestry systems will be investigated using electromagnetic induction measurements (EM38). Through a combination of field measurements and data analysis, the proposed project will provide practical insights for the optimization of soil moisture management in agroforestry practices.

Objectives:

1. To geophysically characterize the spatial and temporal variability of soil moisture in agroforestry systems.
2. To evaluate the effectiveness of EM38 measurements in capturing soil moisture dynamics in different agroforestry configurations.
3. Provide insights for improved soil moisture management that contributes to the optimization of agroforestry practices.

Methodology:

1. Conduct regular EM38 measurements to monitor changes in soil moisture over time.
2. Collect additional environmental data, including weather conditions.
3. Analyze the correlation between geophysical data and soil measurements through soil sampling to enhance the accuracy of soil moisture characterization.
4. Develop spatial maps to illustrate soil moisture variability within the agroforestry system.

Expected Outcomes:

1. In-depth insights into the spatial and temporal variability of soil moisture in agroforestry systems.
2. Identification of key factors influencing soil moisture content, including tree characteristics and spatial arrangement.
3. Validation and calibration of geophysical measurements by correlation with ground-truth data.
4. Recommendations to optimize water management in agroforestry based on observed soil moisture patterns.