

# A Study of Soil Changes in the Tytam Area and Their Relationship to Soil Erosion in the Region

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## Results:

- 1-The eroded site showed a steeper slope, limited vegetation cover, and high soil permeability.
- 2-Higher rainfall during the khareef season increased surface soil erosion.
- 3-The non-eroded site had higher soil cohesion, darker soil color, and greater calcite content.
- 4-Cultivation of Rhodes grass improved soil cohesion, increased calcite content, and enhanced soil stability

## Recommendation:

- 1-Increase vegetation cover in erosion-prone areas using suitable local plant species.
- 2-Apply soil management practices that enhance soil structure and cohesion.
- 3-Monitor rainfall intensity and slope characteristics in vulnerable areas.
- 4-Adopt GLOBE Program soil protocols for continuous soil assessment and erosion monitoring



## Research Plan:

- 1-Identify the research problem and the study area.
- 2-Collect soil samples from two sites in the Tytam area.
- 3-Use the soil protocol to determine the physical and chemical properties of the soil.
- 4-Use the vegetation protocol to assess the density of vegetation cover.
- 5-Analyze the results and perform necessary calculations.
- 6-Write the recommendations based on the findings

## Abstract:

This study investigated the environmental changes in the soil of the Tytam area and the factors contributing to soil erosion using GLOBE Program soil protocols. A comparative analysis between an eroded site and a non-eroded site showed that higher rainfall, steeper slope, limited vegetation cover, and high soil permeability increased erosion risk. The non-eroded site exhibited greater soil cohesion, darker soil color, and higher calcite content, which improved soil stability. Cultivating Rhodes grass (*Cenchrus ciliaris*) proved effective in enhancing soil cohesion and reducing erosion, highlighting the importance of local vegetation as a sustainable solution

## Research Questions:

- Has an environmental change occurred in the soil properties of the Tytam area?
- What natural factors have contributed to the changes in soil properties?
- What is the relationship between soil properties (structure, permeability, salinity, and pH) and soil erosion in the study area?
- To what extent does vegetation cover contribute to reducing soil erosion and improving soil cohesion?