

## Suitability of *Eugenia oleina* in tropical slope as bio-anchorage system

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### ABSTRACT

Landslide is a major geological hazard and poses high risk to most countries in the tropical regions. This problem is more severe in places like Malaysia where residual soil is abundant. High temperature and humidity will easily disintegrate soil particles and therefore loosen the bonding between the soil and the root system. The main goal is to elucidate the interaction mechanism of bio-inspired soil anchorage system to enhance bonding between residual soil matrix in tropical region. Hence, this research aims to establish correlation between the pattern of root and its tensile strength to reinforce tropical residual slope. Basic soil property tests and classification protocols were carried out in the laboratory. Root tensile test results from the laboratory was correlated with field pull-out test data. Slope stability in the area where the plant roots were introduced have been disturbed. The factor of safety of slope with bio-anchorage system was one third of the slope with grass. The findings provide the best solution from the bioinspired soil anchorage system for tropical slope. Hence, the plant species that works well in residual soil for the purpose of reinforcing tropical slope was identified and recommended. As a result, many serious landslides and slope failures in residual soil could be avoided in the tropical region. Therefore, slope stabilization technique such as the bio-inspired soil anchorage system once established can reduce the dependency on conventional concrete wall.

### KEYWORDS

Bio-anchorage system; Direct shear test; Pullout test; Root tensile; Slope stability; Tropical residual soil

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