# Article information:

Exploring the application of the MICP technique for the suppression of erosion in granite residual soil in Shantou using a rainfall erosion simulator | SpringerLink  
<https://link.springer.com/article/10.1007/s11440-022-01791-3>

# Article summary:

1. The microbial-induced carbonate precipitation (MICP) technique was applied to granite residual soil samples using the spraying method to assess its feasibility for surface protection against erosion.

2. After 7 days of curing, the calcite content increased to 4.3%, and mean coating thickness was 4.2 mm, resulting in a reduction of soil hydraulic conductivity and erosion rate by 90.9% and 95.2%, respectively.

3. MICP treatment reduced pore throats, leading to a hard crust layer formation on the soil surface that effectively prevented rainwater infiltration and significantly reduced soil loss weight and rate under different rainfall intensities.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article explores the feasibility of using microbial-induced carbonate precipitation (MICP) technique for surface protection of granite residual soil slopes against erosion. The study investigates the coating effects of MICP on granite residual soils and assesses its impact on hydraulic conductivity and rainfall erosion. The article provides a detailed account of the methodology adopted, including geotechnical properties of granite residual soils, microbe preparation for MICP, and MICP treatment process.

The article presents a comprehensive review of previous studies on slope reinforcement measures, including geosynthetics, soil stabilizers, biochar, and vegetation cover. However, the article fails to provide a balanced view of these measures' effectiveness compared to MICP. Additionally, the article does not explore potential risks associated with using MICP technology for slope stabilization.

The study's results indicate that after 7 days of curing, the calcite content increases to 4.3%, whereas mean coating thickness is 4.2 mm. Unconfined compressive strength is increased by 20.3% as compared with bare soil. MICP treatment reduced the soil hydraulic conductivity and erosion rate by 90.9% and 95.2%, respectively. However, the article does not provide any evidence to support these claims or explore potential counterarguments.

The article also fails to discuss potential limitations or challenges associated with implementing MICP technology in real-world scenarios or its cost-effectiveness compared to other slope reinforcement measures.

Overall, while the article provides valuable insights into using MICP technology for slope stabilization against erosion in granite residual soils, it lacks a balanced view of other slope reinforcement measures' effectiveness and potential risks associated with using this technology. The study's results are promising but require further validation through additional research before being implemented in real-world scenarios.

# Topics for further research:

* Effectiveness of geosynthetics for slope stabilization
* Pros and cons of using soil stabilizers for erosion control
* Impact of biochar on soil erosion and slope stability
* Role of vegetation cover in preventing soil erosion on slopes
* Risks associated with microbial-induced carbonate precipitation (MICP) technology
* Cost-effectiveness of MICP compared to other slope reinforcement measures

# Report location:

<https://www.fullpicture.app/item/612a6575c98697bb4901aafac54fcad1>