CBBG Center for Bio-mediated & Bio-inspired Geotechnics

Erosion: Don’t Let Soil Get Carried Away

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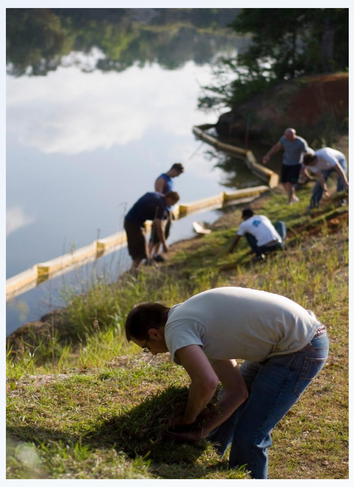
Research Background

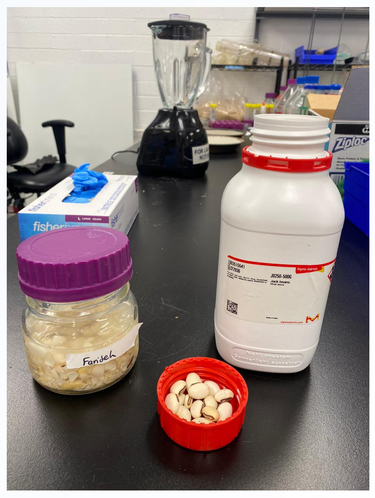
Although Erosion is a natural phenomenon responsible for landforms, it brings some unique challenges for earth and its inhabitants.

- Decrease in soil fertility and flooding
- Fugitive dust leads to pollution as well as health Risks such as valley fever and other diseases
- Traditional solutions- soil compacting using water and vegetation
- Geotechnical engineers are looking and sustainable solutions such as EICP and microbial cementation

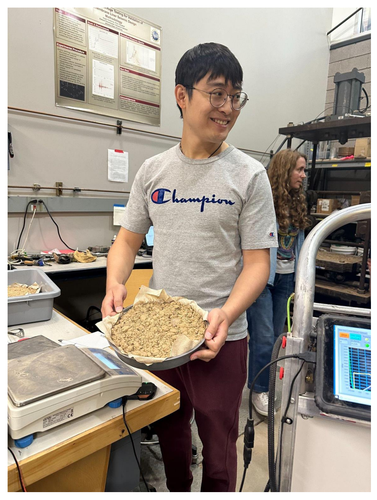
Research Objectives

- Create, test, and compare different solutions for soil erosion.
- Study the performance of EICP solutions on mitigation of erosion on different soil types.
- Observe and measure the amount of Carbonate and Ammonia by using calcimeter, SEM imaging and Optical Microscope.

Research Conclusions

- Discuss the hazards of soil erosion and how to mitigate the issue
- Prepare, test, and compare the application of different solutions for soil erosion.
- Study the performance of EICP solutions on mitigation of erosion on different soil types.
- Measure the amount of Carbonate content and Ammonia by using a calcimeter and perform SEM imaging and Optical Microscope.

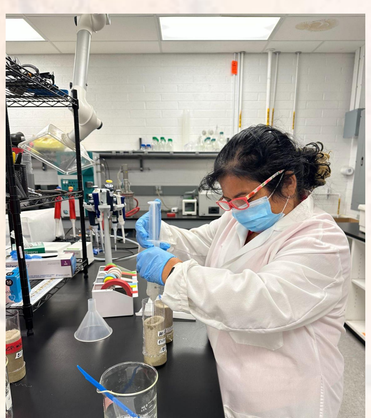
Lesson Description

This lesson is part of a unit about Soil erosion.

- Students will explore different types of erosion and the factors that affect erosion (slope, particle size, wind speed, etc.)
- We will discuss the issues arising out of soil erosion (soil fertility, air pollution, health hazards, etc.) and some ways they are mitigated.
- In this lesson, students will work in groups and demonstrate different ways to solve the problem by strengthening or compacting the soil using various solutions such as water, glue, flour solution, EICP.
- Discussion about effectiveness of different solutions.


Lesson Objectives

- SWBAT discuss and determine how soil erosion impacts the environment and people.
- SWBAT write a hypothesis that predicts which material will create the most resistance against erosion.
- SWBAT create crust using different materials such as glue, corn starch, playdough, vegetation, EICP etc.
- SWBAT compare the efficiency and sustainability of their crust and discuss the pros and cons of each soil cover




Lesson Outcomes

- Describe your lesson implementation
- 3-4 bullets usually, not more
- Can include suggestions for future work.

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