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Methods of Removal of Low Concentration Water Contaminants with Biochar

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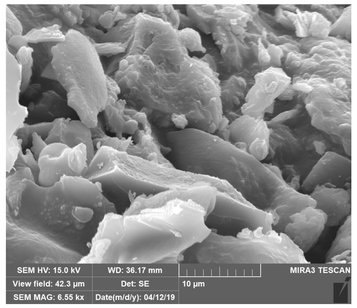
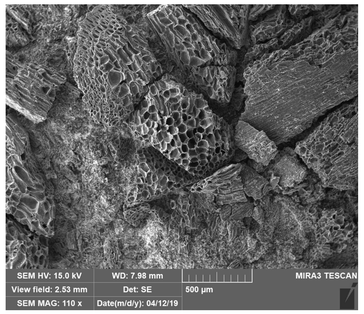
Background

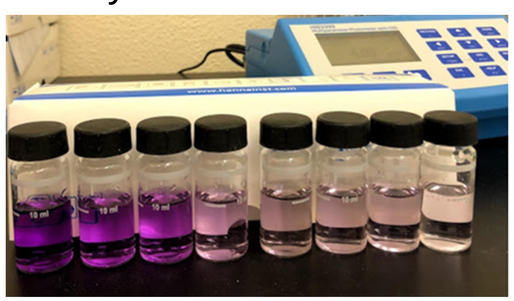
- Biochar forms by pyrolysis of biomass

BIOMASS —*Pyrolysis (Inert, Heat)*→ **BIOCHAR**





- SEM show nonhomogeneous surface morphology
- Adsorption capacity is due to its high specific surface area (SSA)
- Adsorption studies were accomplished with various kinetic experiments, and then analyzed with a Colorimeter



Upcoming Research

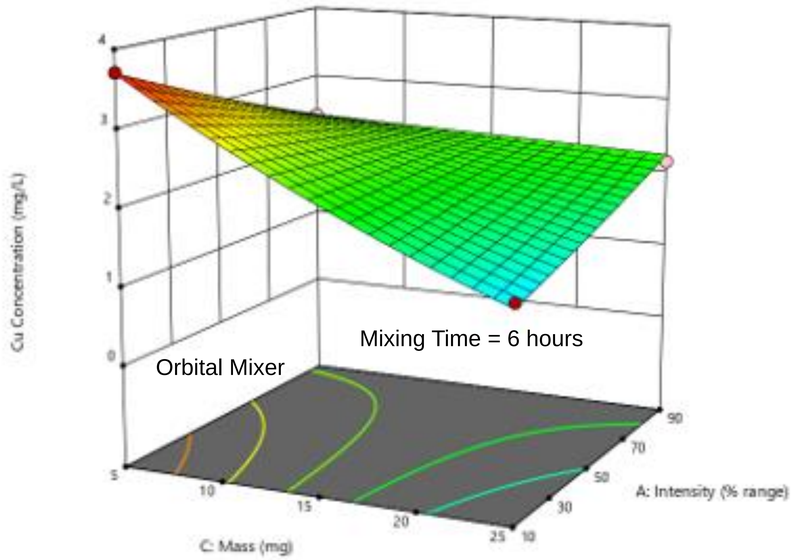
- Optimize and assess the effectiveness of a novel stormwater treatment technology such as a wattle design.
- Construct and test a ballistic biochar delivery device for ecological restoration applications.

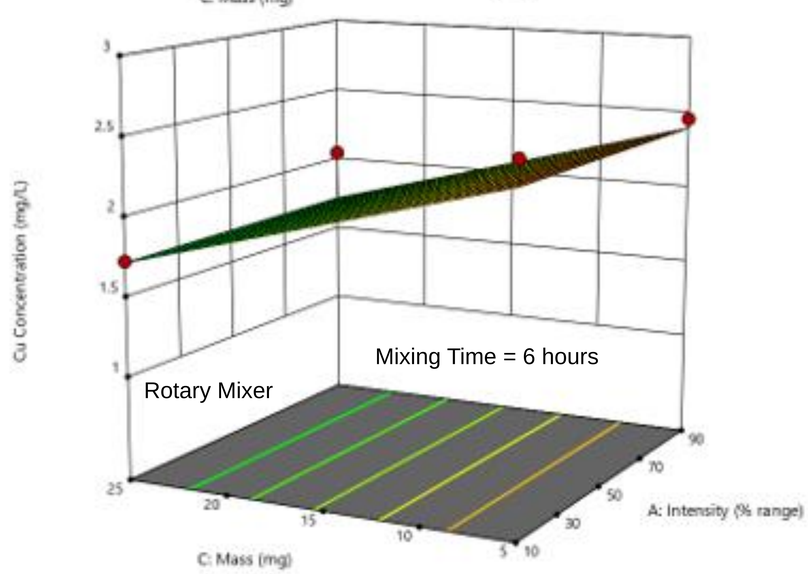
Critical Need

To understand the adsorptive properties of biochar through distinct testing methods..

Factorial Design of Experiments

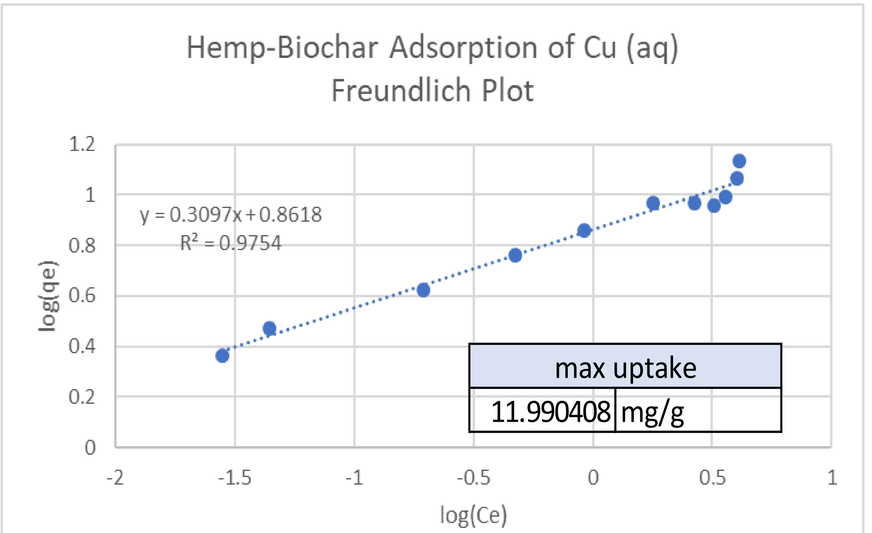
- Two mixing types: orbital and rotary
- Three factors: mixing time, mixing intensity, and biochar adsorbent mass
- Eleven tests per mixer (twenty-two total tests)

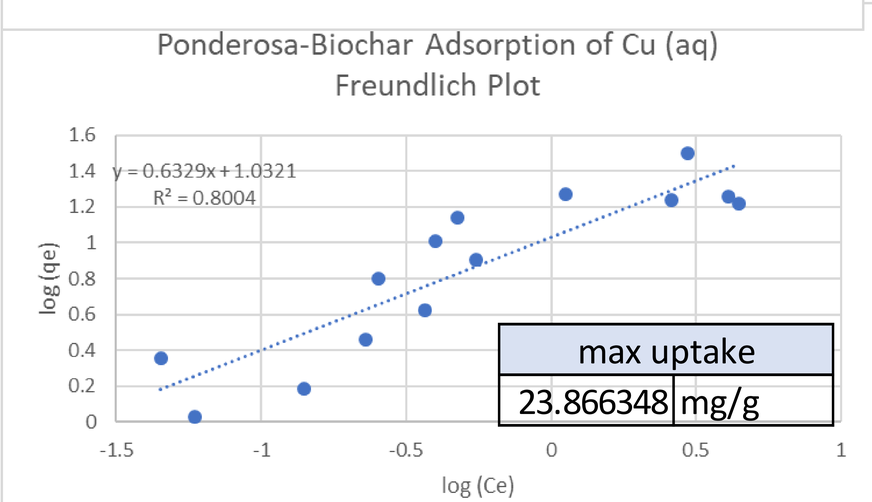




Isotherm Experiments

- Kinetic Isotherm experiments show adsorption properties of materials
- Biochar with high maximum uptake of copper adsorbate are desirable for future application





Acknowledgments

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