

## Motivation

- *Escherichia coli* (*E. coli*) threatens agricultural fields frequently, potentially impacting human and ecosystem health
- Given recent pathogenic outbreaks, an affordable and effective solution to remove *E. coli* from arid agricultural soils is needed
- BioChar has shown promise in removing contaminants in agricultural soils, but the effects are understudied in arid soil

## Experimental Procedure

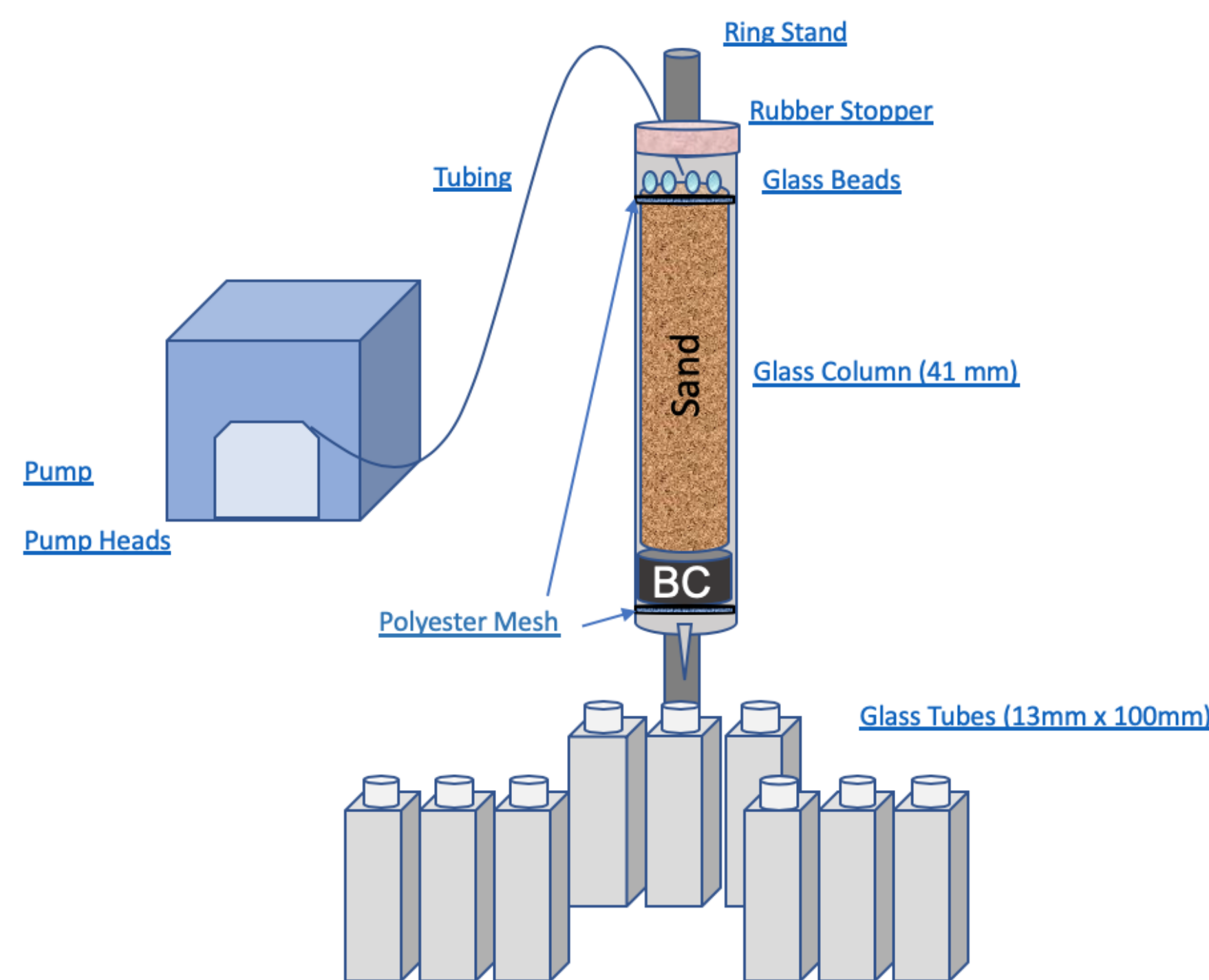


Fig. 1 Column Experiment Schematic



Fig. 2 Bamboo BioChar

## Expected Results

- In accordance with literature and previous research on non-arid soils, BioChar should remove between 70-99% of *E. coli* from arid soils
- These results can be utilized in urban agriculture and large-scale farming to minimize the adverse effects of *E. coli*, while increasing soil carbon

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## Computational Method

- Analysis of functional groups and heat of pyrolysis of the BioChar
- Compare to pharmaceutical removal in sand
- MATLAB method compared to Hydrus removal of pharmaceuticals from wastewater
- Apply program to model BioChar's *E. coli* removal

## Conclusions and Next Steps

- BioChar has also shown promise in removing pharmaceuticals from wastewater, by utilizing the computational model for pharmaceutical removal, assumptions and parallels can be drawn to model *E. coli* removal as well
- Future experiments should be conducted with arid agricultural soil