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*Bio Char: Modern Day Terra Preta*

Four thousand years ago ancient humans studied the effects of incorporating charcoal into the nutrient poor soils of the Amazon. A modern variant, biochar, has been shown to aid in plant growth and help prevent the leaching of water and nutrients. Biochar is 90% fixed carbon by weight, and once in soil sequesters carbon from the atmosphere, thus reducing greenhouse gasses. The purpose of my experiment was to determine what ratio of biochar to potting soil was best for growing plants. I hypothesized that a ratio 40% biochar would promote the most growth in the radishes. Ratios of 0%, 20%, 40%, 60%, 80%, and 100% biochar were used to grow radishes over a three week experiment. Plant growth was measured by both biomass and leaf surface area. The experiment suggests 40% biochar/60% soil is the optimal ratio, which confirms my hypothesis. With the optimal ratio defined, an analysis was performed to determine how many acres of land would need to be infused with biochar to offset man's CO<sub>2</sub> emissions. My analysis indicates infusing 113 million acres/year with biochar, or 1.2% of earth's 9.5 billion arable acres, would be required to offset anthropogenic activity. Biochar has the potential to significantly enhance soil fertility and combat global warming. Given the small scale of this experiment, further research is needed to more precisely determine an optimal ratio, and validate it across other soil and plant types.