

## **Biochar: the optimum geotherapy approach?**

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“Biochar” is charcoal placed in soil. The word was coined only in 2007 – with Biochar's geotherapy importance recognized not much earlier. Probably its greatest geotherapy strength is based on thousands of years already of soil-augmentation. Using mainly charcoal, pre-1500's Amazonians turned arguably the world's worst soils into some of its most productive, thereby avoiding slash-and-burn agriculture. Five centuries later, those soils provide triple soil productivity (and sextupled land value) over “parent” soils only meters away. But equally important is Biochar's also newly recognized capability to restore our increasingly polluted atmosphere. Rather than decaying biomass returning its parent CO<sub>2</sub> to our atmosphere, conversion to Biochar almost-permanently sequesters that same CO<sub>2</sub>. Biochar can thereby restore the more hospitable biosphere that shaped places like Merida and the Yucatan. While serving these two valuable “carbon-negative” geotherapy functions, a third benefit is that up to half of the plant carbon can also expand/support the inherently variable carbon-neutral solar and wind energy resources needed to get to zero fossil fuel use.. These three primary “out-year” advantages seem to best utilize the huge-expandable-but-finite, still-insufficiently-valued biomass resource. Secondary benefits include waste disposal, reduced fertilizer use, nutrient recycling, water retention, reduced N<sub>2</sub>O and methane emissions, job creation, and rural economic development. The world faces a choice to invest or expend: millennial-payback Biochar versus one-time, single-purpose, non-soil use of the same biomass. Issues of possible scale (possibly near today's fossil carbon inputs), costs, food-conflicts, biodiversity, social impacts and needed subsidies will also be addressed.



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