

Biochar: A Critical Review of Science and Policy

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Biofuelwatch

Contents

1. Introduction
2. What is biochar and what are the claims
3. Does the science support the claims?
4. Biochar — The policy context
5. Discussion and implications

Introduction

As we face catastrophic impacts of climate change, efforts to “engineer” the climate are proliferating along with a host of technofix “solutions” for addressing the many consequences of climate change. Among these is the proposal to use soils as a medium for addressing climate change, by scaling up the use of biochar.

Indeed soils around the globe have been severely depleted of carbon as well as nutrients – in large part due to destructive industrial agriculture and tree plantations as well as logging practices, raising serious concerns over the future of food production. Soil depletion has led many to conclude that improving soils might contribute significantly to addressing climate change as well as other converging crisis, by sequestering carbon, boosting fertility, reducing fertiliser use, protecting waterways etc.

But is biochar a viable approach?

Biochar is essentially fine grained charcoal, added to soils. Advocates claim it can sequester carbon for hundreds or even thousands of years and that it improves soil fertility and provides various other benefits – they seek support in order to scale up production. A common vision amongst biochar supporters is that it should be scaled up to such a large scale that it can help to reduce or stabilise atmospheric concentrations of carbon dioxide.

Research to date on biochar has had mixed results and clearly indicates that biochar is not one product but a wide range of chemically very different products which will have very different effects on different soils and in different conditions. Many critically important issues remain very poorly understood; there are likely to be serious and unpredictable negative impacts of this technology if it is adopted on a large scale and there is certainly no “one-size-fit-all” biochar solution.

Soils are extremely diverse and dynamic. They play a fundamental role in supporting plant, microbe, insect and other communities, interacting with the atmosphere, regulating water cycles and more. Unfortunately, like other such schemes, to engineer biological systems, the biochar concept is based on a dangerously reductionist view of the natural world which fails to recognize and accommodate this ecological complexity and variation.

Biochar proponents make unsubstantiated claims and lobby for very significant supports to scale up biochar production. But these supports have largely not been forthcoming. Nonetheless, vigilance is required. In particular, there is potential that agriculture and soils may be broadly included in carbon markets, which could open new potential for supports for biochar. Likewise, as climate geo-engineering discussions are becoming more prominent and accepted, there is potential that biochar could move forward under that guise.

It is imperative that we do not repeat past errors by embracing poorly understood, inherently risky technologies such as biochar that will likely encourage expansion of industrial monocultures, result in more “land grabs” and human rights abuses, further contribute to the loss of biodiversity, and undermine an essential transition to better (agro-ecological) practices in agriculture and forestry.

The following is a substantially expanded update of our initial 2009 briefing: “Biochar for Climate Mitigation: Fact or Fiction?” It is an interim version with the final report to be published during the UN Climate Conference in Durban in late 2011. Since our first briefing as published, there has been a considerable amount of new research, and many new industry and policy developments for biochar. In this update, we also address criticism of our previous briefing by the International Biochar Initiative.ⁱ

We hope this report will generate a deeper understanding of the issues and more critical thinking about biochar.

ⁱ www.biochar-international.org/sites/default/files/Biochar%20Misconceptions%20and%20the%20Science.pdf