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RE: General Methodology for Quantifying the Greenhouse Gas Emission Reductions from the Production and Incorporation into Soil of Biochar in Agricultural and Forest Management Systems submitted by Carbon Gold to VCS

We welcome the prospect of a methodology, or methodologies, related to the use of pyrolysis and related technologies to stabilize the carbon contained in biomass feedstocks.

Despite our enthusiasm, the methodology proposed by Carbon Gold is below the level required to establish a robust global standard. We would prefer a better defined methodology that sets an uncompromising standard, whilst still offering the prospect for cost effective monitoring.

1. Use of term biochar in title

Although the term Biochar is widely used to denote material produced through pyrolysis for use in an environmentally benign way, at least one commercial company (Mantria Industries) presents biochar as a trademarked term <http://www.eternagreen.com/>. Further a number of products that would qualify as biochar go by other names.

To avoid confusion, or implicit endorsement of any brand, we suggest the term biochar be replaced with “carbon stabilized through controlled pyrolysis” in the methodology description.

2. Biochar is NOT inert

The submission assumes that if biochar contains less than 50% volatiles (assessed using ASTM D1762-84) the total mass of biochar C can be considered as inert.

There is considerable evidence that charred materials, including products of pyrolysis, are significantly more stable (by orders of magnitude) than the parent material used as feedstock in their production. However, it is not reasonable to consider char as inert. See [1] for a comprehensive review of the stability of biochar and charred materials.

3. Volatile to Fixed C ratio is not yet proven as an appropriate indicator of the stability of biochar

No evidence is presented to support the application of ASTM D1762-84 and the volatile-fixed C ratio as an appropriate index of the stability of biochar. Further this evidence is lacking in the research literature.

We are aware that some have proposed the use of fixed C as a direct measure of inert C and of others who are undertaking confidential research to establish predictive measures of stability. It is likely to be some time before a reliable predictive indicator emerges.

We recommend that the carbon stabilized by pyrolysis should be subject to the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination. This would allow projects to be initiated and risk assessed based on the best evidence available today and for stability to be demonstrated over time.

4. Monitoring should provide evidence of the stability of C stabilized by pyrolysis

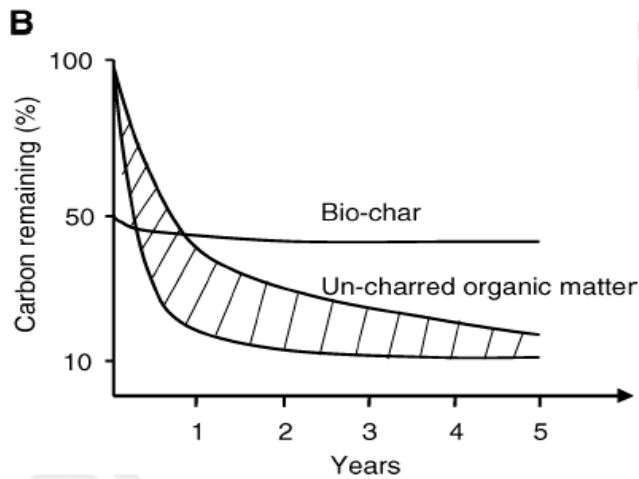
If the recommendation regarding non-permanence above is accepted then the methodology should establish what constitutes appropriate evidence of the persistence of C stabilized by pyrolysis.

Monitoring should focus on verifying the stability of the C stabilized by pyrolysis in the situation in which it is used, or may reasonably be expected to move to, and not the measurement of soil C sequestration.

5. When is the carbon offset generated?

When compared to decomposition under aerobic conditions, pyrolysis accelerates the release of CO₂ from biomass feedstock in the short term compared to the release of CO₂ from the same biomass under aerobic decomposition. However, because the remaining C is significantly more stable than the material used as feedstock [1, 2 & 3] there is a net sequestration realized over a period of years. The figure below illustrates this.

This accelerated release of C may be offset by the production of energy that can be used to displace fossil fuels and avoided emissions associated with prior feedstock management.



Source: Lehmann, Gaunt and Rondon. [3], see also [1].

The methodology does not specify whether the full value of the offset is to be claimed at the time of pyrolysis or as it is realized over time. This will have a significant bearing on the amount of offsets generated during the 10 year operation of a project and on the methodology proposed.

References

1. Lehmann, Czimczik, Laird and Sohi (2009) Stability of Biochar in Soil. *In*. Biochar for Environmental Management: science and technology. Eds. Lehmann J. and Joseph S. pp.183-206
3. Lehmann, Gaunt and Rondon (2006). Mitigation and Adaptation Strategies for Global Change 11: 403-427.
4. Gaunt JL and Cowie A. (2009) Biochar, greenhouse gas accounting and emissions trading. *In*. Biochar for Environmental Management: science and technology. Eds. Lehmann J. and Joseph S. pp. 317-336

Sincerely

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