

Public Comment: NAREEE Advisory Board Meeting, Feb 9-10, 2022 (Zoom)

Dear Ms. Morgan-Jordan and members of the Board,

We are writing to provide input to the National Agricultural Research, Extension, Education, and Economics Advisory Board for consideration at its upcoming meeting on the relevance and adequacy of the climate and energy needs programs of the USDA Research, Education, and Extension mission area and the Cooperative Extension activities of the land-grant university system.

There is great need to increase research on biochar. Biochar is a form of charcoal produced for use in soil by heating biomass in the absence of oxygen. It can be produced from flammable materials removed from forests, crop residue and biomass crops. Biochar lasts for hundreds to thousands of years in soil, providing long-lasting carbon sequestration.

USDA and land grant universities have produced a growing body of research which demonstrates that appropriately designed biochar can sequester carbon, reduce nitrous oxide and methane emissions, slow breakdown of native soil carbon, enhance forest health, improve crop yields and strengthen farm and ecosystem resilience to climate change.

However, results have been inconsistent, reflecting variations in biochar, soils and application practices. There is critical need for a systematic large-scale research program that tests the range of biochar types across soil types, soil and climate conditions and application methods. Biochar has great soil carbon sequestration potential, but we must better understand how to use it productively to realize the full benefit.

A group of leading researchers in biochar and soil carbon sequestration have proposed a ten-year \$150 million per-year program of coordinated research to refine the science and application of using biochar to sequester carbon in soils and enhance agriculture and forestry productivity and resilience ([see attached](#)). Two types of studies would be conducted at each of 20 sites:

**Tier 1: Cross-site and Mechanistic Experiments** - A common set of experiments across sites to fill critical knowledge gaps on the impact of distinct types of biochar on soil health, plant growth, greenhouse gas emissions and carbon sequestration in different soils, climates and conditions. That knowledge will provide the basis to develop, calibrate, and validate models to predict agronomic and environmental outcomes, including the full life cycle greenhouse gas implications of particular applications of biochar.

**Tier 2: Site Specific Farm and Forestry Systems Assessments** – Unique research at each site to refine the most promising uses of biochar in that region. The findings will enable farmers and foresters to use biochar to improve degraded soils, increase plant productivity, lower costs,

improve ecosystem health and enhance resilience to extreme weather events, while contributing to greenhouse gas reduction.

We urge you to address the urgent need for increased research on biochar in your recommendations. This letter and the attached Roadmap for Biochar Research, reflect the view of the authors and not necessarily those of institutions with which we/they are affiliated.

Sincerely,

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