

119TH CONGRESS
1ST SESSION

S. 2450

To amend the Agricultural Research, Extension, and Education Reform Act of 1998 to direct the Secretary of Agriculture to establish a national biochar research network, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JULY 24, 2025

Mr. GRASSLEY (for himself and Mr. HEINRICH) introduced the following bill; which was read twice and referred to the Committee on Agriculture, Nutrition, and Forestry

A BILL

To amend the Agricultural Research, Extension, and Education Reform Act of 1998 to direct the Secretary of Agriculture to establish a national biochar research network, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Biochar Research Net-
5 work Act of 2025”.

1 **SEC. 2. NATIONAL BIOCHAR RESEARCH NETWORK.**

2 Title IV of the Agricultural Research, Extension, and
3 Education Reform Act of 1998 is amended by inserting
4 before section 404 (7 U.S.C. 7624) the following:

5 **“SEC. 403. NATIONAL BIOCHAR RESEARCH NETWORK.**

6 “(a) ESTABLISHMENT.—The Secretary shall estab-
7 lish a national biochar research network (referred to in
8 this section as the ‘research network’) of not more than
9 20 research sites or facilities described in subsection (c)
10 to test the full range of biochar types across soil types,
11 soil health and soil management conditions, application
12 methods, and climatic and agronomic regions—

13 “(1) to assess the soil carbon sequestration po-
14 tential of various biochars and management systems
15 integrating biochar use;

16 “(2) to understand how to use biochar produc-
17 tively to contribute to climate mitigation, crop pro-
18 duction, resilience to extreme weather events, eco-
19 system and soil health, natural resource conserva-
20 tion, and farm profitability; and

21 “(3) to deliver science-based, region-specific,
22 cost-effective, and practical information to farmers,
23 ranchers, foresters, land reclamation managers,
24 urban land managers, and other land and natural
25 resource managers and businesses on sustainable
26 biochar production and application.

1 “(b) SCOPE.—

2 “(1) IN GENERAL.—The research network shall
3 encompass—

4 “(A) agriculture, horticulture, rangeland,
5 forestry, and other biochar uses; and

6 “(B) a broad range of feedstocks, produc-
7 tion processes, and application treatments.

8 “(2) RESEARCH.—The research conducted by
9 the research network shall include—

10 “(A) cross-site and mechanistic experi-
11 ments—

12 “(i) to fill critical knowledge gaps and
13 gain a more complete understanding of the
14 impact of various types of biochar in vary-
15 ing site conditions on soil properties, plant
16 growth, greenhouse gas emissions, and car-
17 bon sequestration in different soils, cli-
18 mates, and other natural and agronomic
19 conditions;

20 “(ii) to provide mechanistic and
21 technoeconomic insights on thermochemical
22 conversion processes in biochar production
23 and the coproduction of biochar and bio-
24 energy, including interactions of feedstock
25 properties with reactor conditions and

1 processes on the relative proportions and
2 properties of biochar, biofuels, and value-
3 added coproducts, as well as process effi-
4 ciency;

5 “(iii) to generate data to develop, cali-
6 brate, and validate robust mechanistic
7 models to predict the full life cycle of
8 greenhouse gas, crop response, and related
9 agronomic and environmental implications
10 of particular applications of biochar;

11 “(iv) to generate data to help guide
12 the design of new, more efficient biochar
13 and bioenergy production reactors and bio-
14 refineries; and

15 “(v) to generate data to develop, cali-
16 brate, and validate testing methodologies
17 for biochar to identify potential contami-
18 nants or other factors that may cause un-
19 intended consequences; and

20 “(B) site-specific farm and forestry sys-
21 tems assessments and pilot-scale biochar pro-
22 duction and application systems—

23 “(i) to refine the most promising soil-
24 based uses, sources, and methods of pro-

1 ducing and applying biochar in particular
2 regions—

3 “(I) to enhance productivity;

4 “(II) to increase profitability,
5 scalability, and portability;

6 “(III) to reduce greenhouse gas
7 emissions;

8 “(IV) to improve ecosystem and
9 soil health;

10 “(V) to strengthen resilience to
11 extreme weather events; and

12 “(VI) to explore soil, crop, cli-
13 mate, management, and biochar inter-
14 actions;

15 “(ii) to develop new knowledge to sup-
16 port decisions on sustainable production
17 and use of biochar;

18 “(iii) to collect relevant data needed
19 for full life cycle greenhouse gas and eco-
20 nomic analyses and complete those anal-
21 ysis;

22 “(iv) to predict plant response, soil
23 health, soil carbon sequestration, eco-
24 system health, water quality, greenhouse

1 gas, and economic outcomes for specific
 2 implementations of biochar technology;

3 “(v) to provide data to evaluate local
 4 biomass feedstocks, support selection of
 5 sustainable biochar production methods,
 6 and address biochar production issues; and

7 “(vi) to share research results to in-
 8 form farmers, horticulturalists, ranchers,
 9 foresters, urban biochar users, extension
 10 agents and specialists, and technical assist-
 11 ance providers on the most advantageous
 12 ways to use biochar to increase profit-
 13 ability, raise productivity, lower costs, im-
 14 prove soil and plant health, and enhance
 15 resilience to extreme weather events while
 16 contributing to carbon sequestration and
 17 greenhouse gas reductions.

18 “(c) ELIGIBILITY.—An entity shall be eligible to be
 19 selected to conduct research as part of the research net-
 20 work if the entity is—

21 “(1) a State agricultural experiment station or
 22 a State forestry experiment station;

23 “(2) a research facility of the Agricultural Re-
 24 search Service, the Forest Service, or any other

1 agency of the Department of Agriculture that the
 2 Secretary determines to be appropriate; or

3 “(3) a research facility of the Department of
 4 Energy, the Department of Commerce, or the De-
 5 partment of the Interior.

6 “(d) ADMINISTRATION.—

7 “(1) IN GENERAL.—The research network shall
 8 be administered by the Administrator of the Agricul-
 9 tural Research Service, in partnership with—

10 “(A) the Chief of the Forest Service;

11 “(B) the Director of the National Institute
 12 of Food and Agriculture;

13 “(C) the Secretary of Energy;

14 “(D) the Secretary of Commerce;

15 “(E) the Secretary of the Interior; and

16 “(F) such other agencies of the Depart-
 17 ment of Agriculture as the Secretary determines
 18 to be appropriate.

19 “(2) CONSERVATION.—The Secretary, acting
 20 through the Chief of the Natural Resources Con-
 21 servation Service—

22 “(A) may develop or revise practice stand-
 23 ards informed by the research conducted by the
 24 research network; and

1 “(B) shall coordinate the activities of the
2 research network with—

3 “(i) the development, expansion, and
4 refinement of conservation practice stand-
5 ards for biochar production and use for
6 soil and forest health, climate adaptation
7 and mitigation, and other conservation
8 purposes; and

9 “(ii) improvements and expansion of
10 conservation program technical and finan-
11 cial support for biochar production, appli-
12 cation, and integration into soil health
13 management systems and other conserva-
14 tion approaches.

15 “(e) AUTHORIZATION OF APPROPRIATIONS.—There
16 is authorized to be appropriated to carry out this section
17 \$50,000,000 for each of fiscal years 2025 through 2030.”.

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