

118TH CONGRESS
1ST SESSION

S. _____

To require the Secretary of Agriculture to carry out a study and research and demonstration on agrivoltaic systems.

IN THE SENATE OF THE UNITED STATES

Mr. HEINRICH (for himself and Mr. BRAUN) introduced the following bill; which was read twice and referred to the Committee on

A BILL

To require the Secretary of Agriculture to carry out a study and research and demonstration on agrivoltaic systems.

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 “Agrivoltaics Research
5 and Demonstration Act of 2023”.

6 **SEC. 2. AGRIVOLTAIC SYSTEMS.**

7 (a) DEFINITION OF AGRIVOLTAIC SYSTEM.—In this
8 section, the term “agrivoltaic system” means a system
9 under which solar energy production and agricultural pro-
10 duction, including crop or animal production, occurs in an

1 integrated manner on the same piece of land through the
2 duration of a project.

3 (b) STUDY.—

4 (1) IN GENERAL.—The Secretary of Agriculture
5 (referred to in this section as the “Secretary”), in
6 coordination with the Secretary of Energy and rel-
7 evant experts, shall conduct a study on agrivoltaic
8 systems that shall include—

9 (A) a review of the current research and
10 gaps in research relating to the regional com-
11 patibility of different species of livestock with
12 different agrivoltaic panel and agrivoltaic sys-
13 tem designs, including—

14 (i) the optimal height of and distance
15 between solar panels for—

16 (I) livestock grazing; and

17 (II) shade for livestock;

18 (ii) manure management consider-
19 ations;

20 (iii) fencing requirements;

21 (iv) other animal handling consider-
22 ations; and

23 (v) the incorporation of apiculture;

24 (B) an assessment of animal breeding re-
25 search needs with respect to beneficial and com-

1 patible characteristics and behaviors of different
2 species of grazing animals in agrivoltaic sys-
3 tems;

4 (C) a review of the current research and
5 gaps in research relating to the regional com-
6 patibility of different crop types with different
7 agrivoltaic system designs, including—

8 (i) the optimal height of and distance
9 between solar panels for—

10 (I) plant shading; and

11 (II) farm equipment use;

12 (ii) the impact on crop yield;

13 (iii) the impact on soil moisture and
14 water availability; and

15 (iv) market opportunities to sell crops
16 at a premium price;

17 (D) an assessment of plant breeding re-
18 search needs with respect to beneficial and com-
19 patible characteristics of different crops, includ-
20 ing specialty and perennial crops, in agrivoltaic
21 systems;

22 (E) a risk-benefit analysis of agrivoltaic
23 systems in different regions of the United
24 States, including a comparison between the
25 total greenhouse gas impact of agrivoltaic sys-

1 tems and solar energy systems that displace ag-
2 ricultural production;

3 (F) an assessment of the economic
4 scalability of agrivoltaic systems across dif-
5 ferent agricultural land types, production sys-
6 tems, and regional markets;

7 (G) an assessment of the types of agricul-
8 tural land best suited and worst suited for
9 agrivoltaic systems;

10 (H) an assessment of how to best develop
11 agrivoltaic systems on a national and local scale
12 consistent with—

13 (i) maintaining or increasing agricul-
14 tural production;

15 (ii) increasing agricultural resilience;

16 (iii) retaining prime farmland;

17 (iv) increasing economic opportunities
18 in farming and rural communities;

19 (v) reducing nonfarmer ownership of
20 farmland; and

21 (vi) enhancing biodiversity;

22 (I) an assessment of the unique risk man-
23 agement and crop insurance needs of agrivoltaic
24 systems;

1 (J) an assessment of how Federal procure-
2 ment of agricultural products could help build
3 a market for agricultural products from farms
4 with agrivoltaic systems; and

5 (K) an assessment of appropriate modifica-
6 tions to better incorporate agrivoltaic systems
7 into existing Federal—

8 (i) agricultural conservation pro-
9 grams;

10 (ii) agricultural risk management pro-
11 grams, including Federal crop insurance;

12 (iii) renewable energy programs;

13 (iv) agricultural procurement pro-
14 grams; and

15 (v) investment tax credits.

16 (2) 5-YEAR PLAN.—Based on the study under
17 paragraph (1), the Secretary shall develop a 5-year
18 plan for using the research, extension, outreach, con-
19 servation, and renewable energy activities of the De-
20 partment of Agriculture to better support agrivoltaic
21 systems that do not displace agricultural production.

22 (3) REPORT.—Not later than 3 years after the
23 date of enactment of this Act, the Secretary shall
24 submit to the Committee on Agriculture of the
25 House of Representatives and the Committee on Ag-

1 riculture, Nutrition, and Forestry of the Senate a
2 report containing the results of the study conducted
3 under paragraph (1).

4 (4) REGULATORY DEFINITION.—

5 (A) IN GENERAL.—Based on the study
6 under paragraph (1), the Secretary, in con-
7 sultation with the Secretary of Energy and
8 farm and conservation groups, shall develop a
9 definition of the term “agrivoltaic system” for
10 purposes of the incorporation of agrivoltaic sys-
11 tems into Federal—

12 (i) agricultural conservation pro-
13 grams;

14 (ii) agricultural risk management pro-
15 grams, including Federal crop insurance;

16 (iii) renewable energy programs;

17 (iv) agricultural procurement pro-
18 grams; and

19 (v) investment tax credits.

20 (B) CONSIDERATIONS.—In developing the
21 definition of “agrivoltaic system” under sub-
22 paragraph (A), the Secretary shall consider—

23 (i) using or modifying the definition
24 described in subsection (a);

1 (ii) regional needs and variations in
2 climate, soils, costs, existing infrastructure,
3 and market access for agrivoltaic system
4 products;

5 (iii) existing State and local
6 agrivoltaic system policies and definitions;
7 and

8 (iv) such other factors as the Sec-
9 retary determines to be appropriate.

10 (c) AGRIVOLTAIC SYSTEM RESEARCH AND DEM-
11 ONSTRATION.—

12 (1) IN GENERAL.—The Secretary, acting
13 through the Administrator of the Agricultural Re-
14 search Service and in coordination with the Director
15 of the National Institute of Food and Agriculture
16 and the relevant research programs of the Depart-
17 ment of Energy, shall establish and maintain a net-
18 work of research and demonstration sites operated
19 by the Agricultural Research Service to investigate
20 and demonstrate agrivoltaic systems in multiple re-
21 gions of the United States, including arid, semi-arid,
22 and wet agricultural zones, that—

23 (A) increase agricultural productivity and
24 profitability;

1 (B) enhance agricultural resilience and the
2 capacity to mitigate and adapt to climate
3 change;

4 (C) protect biodiversity; and

5 (D) increase economic opportunities in
6 farming and rural communities.

7 (2) COLLABORATION.— In establishing and
8 maintaining the network described in paragraph (1),
9 the Secretary shall collaborate with USDA Climate
10 Hubs and extension programs to share research
11 findings and translate research findings into edu-
12 cational, outreach, and technical assistance materials
13 for agricultural producers.

14 (d) AUTHORIZATION OF APPROPRIATIONS.—There is
15 authorized to be appropriated to carry out this section
16 \$15,000,000 for each of fiscal years 2024 through 2028.