

105TH CONGRESS
1ST SESSION

S. 485

To amend the Competitive, Special, and Facilities Research Grant Act to provide increased emphasis on competitive grants to promote agricultural research projects regarding precision agriculture and to provide for the dissemination of the results of the research projects, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 20, 1997

Mr. McCONNELL (for himself, Mr. CRAIG, Mr. KEMPTHORNE, Mr. GRASSLEY, Mr. COCHRAN, Mr. ROBERTS, and Mr. BOND) introduced the following bill; which was read twice and referred to the Committee on Agriculture, Nutrition, and Forestry

A BILL

To amend the Competitive, Special, and Facilities Research Grant Act to provide increased emphasis on competitive grants to promote agricultural research projects regarding precision agriculture and to provide for the dissemination of the results of the research projects, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Precision Agriculture
3 Research, Education, and Information Dissemination Act
4 of 1997”.

5 **SEC. 2. EMPHASIS ON COMPETITIVE GRANTS TO PROMOTE**
6 **PRECISION AGRICULTURE.**

7 (a) PROMOTION OF PRECISION AGRICULTURE.—The
8 Competitive, Special, and Facilities Research Grant Act
9 (section 2 of Public Law 89–106; 7 U.S.C. 450i) is
10 amended by striking subsection (k) and inserting the fol-
11 lowing:

12 “(k) EMPHASIS ON PRECISION AGRICULTURE.—

13 “(1) DEFINITIONS.—In this subsection:

14 “(A) ADVISORY BOARD.—The term ‘advi-
15 sory board’ means the National Agricultural
16 Research, Extension, Education, and Econom-
17 ics Advisory Board established under section
18 1408 of the National Agricultural Research,
19 Extension, and Teaching Policy Act of 1977 (7
20 U.S.C. 3123).

21 “(B) AGRICULTURAL INPUTS.—The term
22 ‘agricultural inputs’ includes all farm manage-
23 ment, agronomic, and field-applied agricultural
24 production inputs, such as machinery, labor,
25 time, fuel, irrigation water, commercial nutri-
26 ents, livestock waste, crop protection chemicals,

1 agronomic data and information, application
2 and management services, seed, and other in-
3 puts used in agricultural production.

4 “(C) PRECISION AGRICULTURE.—The term
5 ‘precision agriculture’ means an integrated
6 information- and production-based farming sys-
7 tem that is designed to increase long-term site-
8 specific and whole-farm production efficiencies,
9 productivity, and profitability while minimizing
10 unintended impacts on wildlife and the environ-
11 ment by—

12 “(i) combining agricultural sciences,
13 agricultural inputs and practices, agro-
14 nomic production databases, and precision
15 agriculture technologies to efficiently man-
16 age agronomic systems;

17 “(ii) gathering on-farm information
18 pertaining to the variation and interaction
19 of site-specific spatial and temporal factors
20 affecting crop production;

21 “(iii) integrating the information with
22 appropriate data derived from remote sens-
23 ing and other precision agriculture tech-
24 nologies in a timely manner in order to fa-
25 cilitate on-farm decisionmaking; and

1 “(iv) using the information to pre-
2 scribe and deliver site-specific application
3 of agricultural inputs and management
4 practices in agricultural production sys-
5 tems.

6 “(D) PRECISION AGRICULTURE TECH-
7 NOLOGIES.—The term ‘precision agriculture
8 technologies’ includes—

9 “(i) instrumentation and techniques
10 ranging from sophisticated sensors and
11 software systems to manual sampling and
12 data collection tools that measure, record,
13 and manage spatial and temporal data;

14 “(ii) technologies for searching out
15 and assembling information necessary for
16 sound agricultural production decisionmak-
17 ing;

18 “(iii) open systems technologies for
19 data networking and processing that
20 produce valued systems for farm manage-
21 ment decisionmaking, including high band-
22 width networks, distributed processing,
23 spatial databasing, object technology, glob-
24 al positioning systems, data modeling, high
25 performance image processing, high resolu-

1 tion satellite imagery, digital
2 orthophotogrammetry simulation, geo-
3 graphic information systems, computer
4 aided design, and digital cartography; and

5 “(iv) machines that deliver informa-
6 tion based management practices, includ-
7 ing global positioning satellites, digital
8 field mapping, on-the-go yield monitoring,
9 automated pest scouting, and site-specific
10 agricultural input application to accom-
11 plish the objectives of precision agriculture.

12 “(E) SYSTEMS RESEARCH.—The term ‘sys-
13 tems research’ means an integrated, coordi-
14 nated, and iterative investigative process that
15 considers the multiple interacting components
16 and aspects of precision agriculture systems, in-
17 cluding synthesis of new knowledge regarding
18 the physical-chemical-biological processes and
19 complex interactions with cropping and natural
20 resource systems, precision agriculture tech-
21 nologies development and implementation, data
22 and information collection and interpretation,
23 production scale planning, production-scale im-
24 plementation, and farm production efficiencies,
25 productivity, and profitability.

1 “(2) EMPHASIS ON RESEARCH, EDUCATION,
2 AND INFORMATION DISSEMINATION GRANTS.—The
3 Secretary of Agriculture, in collaboration with the
4 advisory board, shall ensure that research, edu-
5 cation, and information dissemination grants made
6 under subsection (b) are, where appropriate, consist-
7 ent with the development and promotion of precision
8 agriculture. Research, education, and information
9 dissemination projects supported by the grants and
10 designed to develop and demonstrate precision agri-
11 culture shall address 1 or more of the following:

12 “(A) The study and promotion of compo-
13 nents of precision agriculture technologies using
14 a systems research approach designed to in-
15 crease long-term site-specific and whole-farm
16 production efficiencies, productivity, and profit-
17 ability.

18 “(B) The improvement in the understand-
19 ing of agronomic systems, including soil, water,
20 land cover, and meteorological variability.

21 “(C) The development, demonstration, and
22 dissemination of information regarding preci-
23 sion agriculture technologies and systems into
24 an integrated program.

1 “(D) The promotion of systems research
2 and education projects focusing on the integra-
3 tion of the multiple aspects of precision agri-
4 culture, including development, production-scale
5 implementation, and farm production effi-
6 ciencies, productivity, and profitability.

7 “(E) The education of agricultural produc-
8 ers and consumers regarding the benefits of
9 precision agriculture as it relates to increased
10 long-term farm production efficiencies, produc-
11 tivity, and profitability, as well as the mainte-
12 nance of the environment and improvements in
13 international trade.

14 “(F) The provision of training and edu-
15 cational programs for State cooperative exten-
16 sion services agents, agricultural producers, ag-
17 ricultural input machinery, product, and service
18 providers, and certified crop advisers and other
19 professionals involved in the agricultural pro-
20 duction and transfer of integrated precision agri-
21 culture technology.

22 “(3) PRIORITIES FOR RESEARCH, EDUCATION,
23 AND INFORMATION DISSEMINATION GRANTS.—In
24 making grants to eligible entities under subsection
25 (b) regarding precision agriculture, the Secretary, in

1 collaboration with the advisory board, shall give pri-
2 ority to research, education, and information dis-
3 semination projects that are designed to accomplish
4 the following:

5 “(A) The use of precision agriculture tech-
6 nologies and a systems research approach to in-
7 crease long-term site-specific and whole-farm
8 production efficiencies, productivity, and profit-
9 ability.

10 “(B) The integration of research, edu-
11 cation, and information dissemination compo-
12 nents in a practical and readily available man-
13 ner so that the findings of the project will be
14 made readily usable by farmers.

15 “(C) The promotion of the efficient use of
16 agricultural inputs, rather than the uniform re-
17 duction in the use of agricultural inputs.

18 “(D) The maximization of the involvement
19 and cooperation of precision agriculture produc-
20 ers, certified crop advisers, State cooperative
21 extension services agents, and agricultural input
22 machinery, product, and service providers in
23 precision agriculture systems research projects
24 involving on-farm research, education, and in-

1 formation dissemination of precision agri-
2 culture.

3 “(E) The cooperation among farms that
4 are managed using precision agriculture farm
5 production practices, nonprofit organizations,
6 agribusinesses, agricultural input machinery,
7 product, and service providers, land-grant col-
8 leges and universities, the State cooperative ex-
9 tension services, and Government agencies (in-
10 cluding national laboratories).

11 “(F) The benefits of precision agriculture
12 in relationship to global food production, reduc-
13 ing world hunger, world population trends, and
14 efforts to maintain and enhance the environ-
15 ment.

16 “(G) The diversity of United States agri-
17 cultural production, including production on
18 family owned and operated farms, large acreage
19 farms, small acreage farms, and mixed crop,
20 specialty crop, commodity crop, and livestock
21 operations.

22 “(H) The maximization of collaboration
23 with multiple agencies and other partners that
24 includes leveraging of funds and resources.

1 “(4) EDUCATION AND INFORMATION DISSEMI-
2 NATION.—

3 “(A) RESERVATION OF FUNDS FOR
4 PROJECTS.—Of the funds allocated for competi-
5 tive research grants under subsection (b) relat-
6 ed to precision agriculture, the Secretary shall
7 reserve a portion of the funds for education and
8 information dissemination projects regarding
9 precision agriculture.

10 “(B) COMPLIANCE WITH PRIORITIES FOR
11 INFORMATION DISSEMINATION.—In the dissemi-
12 nation of information derived from research
13 projects regarding precision agriculture that are
14 supported by grants made under subsection (b),
15 the Secretary shall ensure that both employees
16 of the Department of Agriculture and grant re-
17 cipients comply with the priorities specified in
18 paragraph (3).

19 “(5) PRECISION AGRICULTURE PARTNER-
20 SHIPS.—

21 “(A) ESTABLISHMENT.—For the purposes
22 of this section, the Secretary, in collaboration
23 with the advisory board, shall encourage the es-
24 tablishment of appropriate multistate and na-
25 tional partnerships or consortia between—

1 “(i) land-grant colleges and univer-
2 sities, State Agricultural Experiment Sta-
3 tions, State cooperative extension services,
4 other colleges and universities with demon-
5 strable expertise regarding precision agri-
6 culture, agencies of the Department of Ag-
7 riculture, national laboratories, agri-
8 businesses, agricultural equipment and
9 input manufacturers and retailers, certified
10 crop advisers, commodity organizations,
11 other Federal or State government entities
12 and agencies, and non-agricultural indus-
13 tries and nonprofit organizations with de-
14 monstrable expertise regarding precision
15 agriculture; and

16 “(ii) the persons and entities de-
17 scribed in clause (i) and agricultural pro-
18 ducers and other land managers.

19 “(B) PARTNERSHIP BETWEEN NATIONAL
20 LABORATORIES AND DEPARTMENT OF AGRI-
21 CULTURE.—The partnerships established pursu-
22 ant to this paragraph shall include the partner-
23 ship entered into (before the date of the enact-
24 ment of this paragraph) by the Secretary of
25 Energy, on behalf of the national laboratories,

1 and the Secretary of Agriculture to promote co-
2 operation and coordination between the national
3 laboratories and agencies of the Department of
4 Agriculture in the areas of systems research,
5 technology research and development, and the
6 transfer, utilization, and private-sector commer-
7 cialization of technology.

8 “(C) ROLE OF PARTNERSHIPS.—Partner-
9 ships described in subparagraphs (A) and (B)
10 shall be eligible grantees for conducting systems
11 research (including on-farm research) regarding
12 precision agriculture and precision agriculture
13 technologies.

14 “(6) SPECIAL ASPECTS OF RESEARCH
15 GRANTS.—As part of a research project regarding
16 precision agriculture that is funded under subsection
17 (b), the grant recipient shall agree, to the extent
18 practicable, to—

19 “(A) study precision agriculture production
20 systems that are located in areas that possess
21 diverse crop, soil, climate, and physical charac-
22 teristics;

23 “(B) study farms that are or have been
24 managed using precision agriculture farm pro-
25 duction practices that rely on the efficient use

1 of agricultural inputs and precision agriculture
2 technologies to increase farm production effi-
3 ciency, productivity, and profitability;

4 “(C) conduct demonstration projects on
5 farms that will be managed using precision ag-
6 riculture;

7 “(D) take advantage of the experience and
8 expertise of agricultural producers through
9 their direct participation and leadership in
10 projects;

11 “(E) utilize advanced access and commu-
12 nications technologies to transfer practical, reli-
13 able, and timely information to agricultural pro-
14 ducers concerning precision agriculture prac-
15 tices, technologies, and systems; and

16 “(F) promote partnerships among produc-
17 ers, nonprofit organizations, agribusinesses, ag-
18 ricultural input machinery, product, and service
19 providers, colleges and universities, the State
20 cooperative extension services, and Government
21 agencies (including national laboratories).”.

22 (b) REPORTING REQUIREMENTS.—The Competitive,
23 Special, and Facilities Research Grant Act (section 2 of
24 Public Law 89–106; 7 U.S.C. 450i) is amended by strik-
25 ing subsection (l) and inserting the following:

1 “(1) REPORTING REQUIREMENTS OF GRANT RECIPI-
2 ENTS.—In addition to the recordkeeping responsibilities of
3 recipients of assistance under this section, as prescribed
4 by the Secretary under subsection (f), the Secretary shall
5 prescribe regulations to require grant recipients to submit
6 to the Secretary periodic reports regarding the research,
7 education, and information dissemination activities sup-
8 ported with the assistance so as to enhance the usefulness
9 of the monitoring and evaluation system developed by the
10 Secretary under section 1413A(b) of the National Agricul-
11 tural Research, Extension, and Teaching Policy Act of
12 1977 (7 U.S.C. 3129(b)).”.

13 (c) ENTITIES ELIGIBLE FOR GRANTS.—The Com-
14 petitive, Special, and Facilities Research Grant Act (sec-
15 tion 2 of Public Law 89–106; 7 U.S.C. 450i) is amended
16 in subsection (b)(1)—

17 (1) by inserting after “Federal agencies” the
18 following: “(including laboratories as defined in sec-
19 tion 12(d) of the Stevenson-Wydler Technology In-
20 novation Act of 1980 (15 U.S.C. 3710a(d)))”; and

21 (2) by inserting after “corporations” the follow-
22 ing: “(including agricultural input machinery, prod-
23 uct, and service providers)”.

24 (d) PRECISION AGRICULTURE RESEARCH, EXTEN-
25 SION, AND EDUCATION, UNDER FUND FOR RURAL AMER-

1 ICA.—Section 793(c)(2)(A) of the Federal Agriculture Im-
2 provement and Reform Act of 1996 (Public Law 104–127;
3 7 U.S.C. 2204f(c)(2)(A)) is amended—

4 (1) in clause (vii), by striking “and” at the end;

5 (2) in clause (viii), by striking the period at the
6 end and inserting “; and”; and

7 (3) by inserting after clause (viii) the following:

8 “(ix) develop and promote precision
9 agriculture and precision agriculture tech-
10 nologies using a systems research ap-
11 proach, as the terms are defined in sub-
12 section (k)(1) of the Competitive, Special,
13 and Facilities Research Grant Act (section
14 2 of Public Law 89–106; 7 U.S.C. 450i).”.

15 (e) TECHNICAL AMENDMENT.—The Competitive,
16 Special, and Facilities Research Grant Act (section 2 of
17 Public Law 89–106; 7 U.S.C. 450i) is amended in sub-
18 section (b)(9)(A) by striking “subsection (j)” and insert-
19 ing “subsection (k)”.

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