104TH CONGRESS
2D SESSION

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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

JULY 19, 1996

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

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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.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Precision Agriculture Research, Education, and Information Dissemination Act of 1996''.

SEC. 2. EMPHASIS ON COMPETITIVE GRANTS TO PROMOTE PRECISION AGRICULTURE.

(a) PROMOTION OF PRECISION AGRICULTURE.—Subsection (k) of the Competitive, Special, and Facilities Research Grant Act (section 2 of Public Law 89–106; 7 U.S.C. 450i) is amended to read as follows:

''(k) EMPHASIS ON PRECISION AGRICULTURE.—

''(1) DEFINITIONS.—In this subsection:

''(A) ADVISORY BOARD.—The term 'advisory board' means the National Agricultural Research, Extension, Education, and Economics Advisory Board established under section 1408 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3123).

''(B) AGRICULTURAL INPUTS.—The term 'agricultural inputs' includes all farm management, agronomic, and field-applied agricultural production inputs, such as machinery, labor, time, fuel, irrigation water, commercial nutrients, livestock waste, crop protection chemicals, agronomic data and information, application

and management services, seed, and other inputs used in agricultural production.

''(C) PRECISION AGRICULTURE.—The term 'precision agriculture' means an integrated information- and production-based farming system that is designed to increase long-term site-specific and whole-farm production efficiencies, productivity, and profitability while minimizing unintended impacts on wildlife and the environment by—

''(i) combining agricultural sciences, agricultural inputs and practices, agronomic production databases, and precision agriculture technologies to efficiently manage agronomic systems;

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

''(iii) integrating the information with appropriate data derived from remote sensing and other precision agriculture technologies in a timely manner in order to facilitate on-farm decisionmaking; and

"(iv) using the information to prescribe and deliver site-specific application of agricultural inputs and management practices in agricultural production systems.

"(D) PRECISION AGRICULTURE TECHNOLOGIES.—The term 'precision agriculture technologies' includes—

"(i) instrumentation and techniques ranging from sophisticated sensors and software systems to manual sampling and data collection tools that measure, record, and manage spatial and temporal data;

"(ii) technologies for searching out and assembling information necessary for sound agricultural production decisionmaking;

"(iii) open systems technologies for data networking and processing that produce valued systems for farm management decisionmaking, including high bandwidth networks, distributed processing, spatial databasing, object technology, global positioning systems, data modeling, high performance image processing, high resolu-

tion satellite imagery, digital orthophotgrammetry simulation, geographic information systems, computer aided design, and digital cartography; and

''(iv) machines that deliver information based management practices, including global positioning satellites, digital field mapping, on-the-go yield monitoring, automated pest scouting, and site-specific agricultural input application to accomplish the objectives of precision agriculture.

''(E) SYSTEMS RESEARCH.—The term 'systems research' means an integrated, coordinated, and iterative investigative process that considers the multiple interacting components and aspects of precision agriculture systems, including synthesis of new knowledge regarding the physical-chemical-biological processes and complex interactions with cropping and natural resource systems, precision agriculture technologies development and implementation, data and information collection and interpretation, production scale planning, production-scale implementation, and farm production efficiencies, productivity, and profitability.

''(2) EMPHASIS ON RESEARCH, EDUCATION, AND INFORMATION DISSEMINATION GRANTS.—The Secretary of Agriculture, in collaboration with the advisory board, shall ensure that research, education, and information dissemination grants made under subsection (b) are, where appropriate, consistent with the development and promotion of precision agriculture. Research, education, and information dissemination projects supported by the grants and designed to develop and demonstrate precision agriculture shall address 1 or more of the following:

''(A) The study and promotion of components of precision agriculture technologies using a systems research approach designed to increase long-term site-specific and whole-farm production efficiencies, productivity, and profitability.

''(B) The improvement in the understanding of agronomic systems, including soil, water, land cover, and meteorological variability.

''(C) The development, demonstration, and dissemination of information regarding precision agriculture technologies and systems into an integrated program.

''(D) The promotion of systems research and education projects focusing on the integration of the multiple aspects of precision agriculture, including development, production-scale implementation, and farm production efficiencies, productivity, and profitability.

''(E) The education of agricultural producers and consumers regarding the benefits of precision agriculture as it relates to increased long-term farm production efficiencies, productivity, and profitability, as well as the maintenance of the environment and improvements in international trade.

''(F) The provision of training and educational programs for State cooperative extension services agents, agricultural producers, agricultural input machinery, product, and service providers, and certified crop advisers and other professionals involved in the agricultural production and transfer of integrated precision agriculture technology.

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

collaboration with the advisory board, shall give priority to research, education, and information dissemination projects that are designed to accomplish the following:

''(A) The use of precision agriculture technologies and a systems research approach to increase long-term site-specific and whole-farm production efficiencies, productivity, and profitability.

''(B) The integration of research, education, and information dissemination components in a practical and readily available manner so that the findings of the project will be made readily usable by farmers.

''(C) The promotion of the efficient use of agricultural inputs, rather than the uniform reduction in the use of agricultural inputs.

''(D) The maximization of the involvement and cooperation of precision agriculture producers, certified crop advisers, State cooperative extension services agents, and agricultural input machinery, product, and service providers in precision agriculture systems research projects involving on-farm research, education, and in-

formation dissemination of precision agriculture.

''(E) The cooperation among farms that are managed using precision agriculture farm production practices, nonprofit organizations, agribusinesses, agricultural input machinery, product, and service providers, land-grant colleges and universities, the State cooperative extension services, and Government agencies (including national laboratories).

''(F) The benefits of precision agriculture in relationship to global food production, reducing world hunger, world population trends, and efforts to maintain and enhance the environment.

''(G) The diversity of United States agricultural production, including production on family owned and operated farms, large acreage farms, small acreage farms, and mixed crop, specialty crop, commodity crop, and livestock operations.

''(H) The maximization of collaboration with multiple agencies and other partners that includes leveraging of funds and resources.

''(4) EDUCATION AND INFORMATION DISSEMINATION.—

''(A) RESERVATION OF FUNDS FOR PROJECTS.—Of the funds allocated for competitive research grants under subsection (b) related to precision agriculture, the Secretary shall reserve a portion of the funds for education and information dissemination projects regarding precision agriculture.

''(B) COMPLIANCE WITH PRIORITIES FOR INFORMATION DISSEMINATION.—In the dissemination of information derived from research projects regarding precision agriculture that are supported by grants made under subsection (b), the Secretary shall ensure that both employees of the Department of Agriculture and grant recipients comply with the priorities specified in paragraph (3).

''(5) PRECISION AGRICULTURE PARTNERSHIPS.—

''(A) ESTABLISHMENT.—For the purposes of this section, the Secretary, in collaboration with the advisory board, shall encourage the establishment of appropriate multistate and national partnerships or consortia between—

"(i) land-grant colleges and universities, State Agricultural Experiment Stations, State cooperative extension services, other colleges and universities with demonstrable expertise regarding precision agriculture, agencies of the Department of Agriculture, national laboratories, agribusinesses, agricultural equipment and input manufacturers and retailers, certified crop advisers, commodity organizations, other Federal or State government entities and agencies, and non-agricultural industries and nonprofit organizations with demonstrable expertise regarding precision agriculture; and

"(ii) the persons and entities described in clause (i) and agricultural producers and other land managers.

"(B) PARTNERSHIP BETWEEN NATIONAL LABORATORIES AND DEPARTMENT OF AGRICULTURE.—The partnerships established pursuant to this paragraph shall include the partnership entered into (before the date of the enactment of this paragraph) by the Secretary of Energy, on behalf of the national laboratories,

and the Secretary of Agriculture to promote cooperation and coordination between the national laboratories and agencies of the Department of Agriculture in the areas of systems research, technology research and development, and the transfer, utilization, and private-sector commercialization of technology.

''(C) ROLE OF PARTNERSHIPS.—Partnerships described in subparagraphs (A) and (B) shall be eligible grantees for conducting systems research (including on-farm research) regarding precision agriculture and precision agriculture technologies.

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

''(A) study precision agriculture production systems that are located in areas that possess diverse crop, soil, climate, and physical characteristics;

''(B) study farms that are or have been managed using precision agriculture farm production practices that rely on the efficient use

of agricultural inputs and precision agriculture technologies to increase farm production efficiency, productivity, and profitability;

''(C) conduct demonstration projects on farms that will be managed using precision agriculture;

''(D) take advantage of the experience and expertise of agricultural producers through their direct participation and leadership in projects;

''(E) utilize advanced access and communications technologies to transfer practical, reliable, and timely information to agricultural producers concerning precision agriculture practices, technologies, and systems; and

''(F) promote partnerships among producers, nonprofit organizations, agribusinesses, agricultural input machinery, product, and service providers, colleges and universities, the State cooperative extension services, and Government agencies (including national laboratories).''.

(b) REPORTING REQUIREMENTS.—Subsection (l) of the Competitive, Special, and Facilities Research Grant Act (section 2 of Public Law 89–106; 7 U.S.C. 450i) is amended to read as follows:

''(l) REPORTING REQUIREMENTS OF GRANT RECIPIENTS.—In addition to the recordkeeping responsibilities of recipients of assistance under this section, as prescribed by the Secretary under subsection (f), the Secretary shall prescribe regulations to require grant recipients to submit to the Secretary periodic reports regarding the research, education, and information dissemination activities supported with the assistance so as to enhance the usefulness of the monitoring and evaluation system developed by the Secretary under section 1413A(b) of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3129(b)).''.

(c) ENTITIES ELIGIBLE FOR GRANTS.—Subsection (b)(1) of the Competitive, Special, and Facilities Research Grant Act (section 2 of Public Law 89–106; 7 U.S.C. 450i) is amended—

(1) by inserting after ''Federal agencies'' the following: ''(including laboratories as defined in section 12(d) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(d)))''; and

(2) by inserting after ''corporations'' the following: ''(including agricultural input machinery, product, and service providers)''.

(d) PRECISION AGRICULTURE RESEARCH, EXTENSION, AND EDUCATION, UNDER FUND FOR RURAL AMER-

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

(1) by striking ''and'' at the end of clause (vii);

(2) by striking the period at the end of clause (viii) and inserting ''; and''; and

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

''(ix) develop and promote precision agriculture and precision agriculture technologies using a systems research approach, as the terms are defined in subsection (k)(1) of the Competitive, Special, and Facilities Research Grant Act (section 2 of Public Law 89–106; 7 U.S.C. 450i).''.

(e) TECHNICAL AMENDMENT.—Subsection (b)(9)(A) of the Competitive, Special, and Facilities Research Grant Act (section 2 of Public Law 89–106; 7 U.S.C. 450i) is amended by striking ''subsection (j)'' and inserting ''subsection (k)''.

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