cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

FERTILIZER RESEARCH AND EDUCATION PROGRAM FREP

California Department of Food and Agriculture
Fertilizer Research and Education Program

2018 REQUEST FOR PROPOSALS

The Fertilizer Research and Education Program (FREP) within the California Department of Food and Agriculture's (CDFA) Division of Inspection Services is currently accepting concept proposals. Proposals must focus on at least one of the priority areas listed below, and may focus on research and/or education projects to provide growers and industry with cost-effective practices to improve the efficient use of fertilizer and minimize environmental impacts.

FREP does not support proprietary product development, testing, or promotion. Grant funding of $75,000 per year for up to three years is typical for projects, but projects requesting more than $75,000 and lasting longer than three years will be considered on a case-by-case basis. Concept proposals leveraging other sources of funding are strongly encouraged and are welcomed. Concept proposals may originate from outside California, but proposals must be relevant to California growing conditions.

Concept proposals are due by 5:00 p.m. on Wednesday, January 31st, 2018. NO EXCEPTIONS GRANTED.

After review and evaluation, selected Concept Proposals will be invited to submit a Full Proposal that will be due May 16, 2018.

2018 PRIORITY FUNDING AREAS

FREP invites research and education project proposals in three major priority areas: Improving Input Management, Understanding Soil-Plant Processes, and Characterizing Loss Pathways.

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1. IMPROVING INPUT MANAGEMENT:

A. Improving and/or Promoting Adoption of Management Practices that Optimize Nutrient and/or Irrigation Water Use

Innovative management practices must be implemented on farms to promote agricultural sustainability and solve agricultural challenges in California. Extension efforts that improve management practices and help implement efficient nutrient management on growers' fields are a high priority. Important activities include:

- Promoting adoption of currently existing decision support tools (e.g. CropManage)
- Supporting peer-to-peer and community based learning
- Field–scale demonstration of recommended practices related to management of fertilizing materials. These can include, but are not limited to, demonstrations of the effectiveness of implementing the 4 R's of nutrient stewardship, tissue and soil sampling to guide fertilizer scheduling, irrigation management to improve nutrient use efficiency, and nitrogen recovery and fixation with cover crops.

B. Addressing Challenges and Barriers to Adoption of Management Practices

Identifying the barriers that slow down implementation of best management practices at the grower level is a knowledge gap that needs attention. A variety of management practices that can save money, time and improve environmental outcomes are already available; however, many of these practices have not been

adopted on a large scale. Research focusing on barriers to widespread adoption of improved management practices could include:

- The costs, benefits and economic thresholds associated with adoption of various practices that can reduce negative environmental impacts (e.g. improved management practices), including perceived and modeled costs of specific practices and how they are affected by different farm characteristics.
- The regulatory or institutional barriers that limit the development, implementation or success of practices that maximize irrigation and nutrient efficiency.
- The types of incentives or programs that may increase grower implementation of practices to optimize water and nutrient use.
- Human behavior related to decision-making and adoption of practices. This may include, but is not limited to, studies that address fertilization and agricultural management decisions and the social, economic, and political variables driving adoption of effective practices that improve fertilizer management.

C. Education and Outreach (Technical Education)

Implementing optimum irrigation and nutrient management practices depends on skilled and knowledgeable growers, managers, and field staff. Additionally, technical training for workers and managers supports improvements in on-farm management. The availability of training programs for agricultural workers at all levels will empower farm staff to irrigate and manage nutrients more effectively. This will help growers and farm workers implement practices that support agronomic production and optimize environmental outcomes. Development of educational and/or certification programs to improve irrigation management is encouraged. Potential training topics include nitrogen management training for growers (located outside of the Central Valley), irrigation and/or nutrient management training for agricultural staff at all levels (excluding training programs that duplicate existing nitrogen management training for growers in the Central Valley).

2. UNDERSTANDING SOIL-PLANT PROCESSES:

A. Filling Knowledge Gaps for Nitrogen Management in Specific Crops

- Baby lettuce: There is very little available information about the nutrient and irrigation management of this crop within existing cropping systems.
- High density, sprinkler-irrigated annual crops grown on raised, wide-bed (80-84") systems: Nitrogen fertilization of sprinkler-irrigated row crops often occurs by fertigation that is often inefficient. The development of alternative fertility practices are needed to increase N use efficiency on these crops.
- Pima cotton: Anecdotal evidence indicates that Pima nutrient requirements differ from that of Acala varieties.
- Other row crops: More information is needed on nutrient management practices for row and vegetable crops grown with buried drip irrigation systems.
- Citrus: There are knowledge gaps pertaining to California citrus for validating leaf nutrient critical values (CVs) for citrus, improving leaf sampling protocols, developing a monthly nutrient demand model for citrus and developing BMP's to share findings.
- Root crops: Carrot is an example of a root crop often grown on sandy soils using sprinkler irrigation. While carrot can scavenge nitrogen at depths, more information is needed to optimize nitrogen management on carrot.

B. The Role of Soil Organic Matter and Organic Fertilizing Materials on Soil Nutrient Management

Across California, organic materials are applied to agricultural soils to improve soil physical, chemical and biological properties. However, there is limited information available on the role these materials have in nutrient and water management, particularly pertaining to in-field nitrogen mineralization. More information on the plant-availability of nitrogen from organic sources is needed for management decisions, and since growers are required to estimate mineralization rates to complete the mandatory nitrogen management plans submitted to the Regional Water Boards. These organic materials include, but are not limited to, nitrogen-containing soil amendments such as organic input materials and cover crops.

3. CHARACTERIZING LOSS PATHWAYS:

A. Understanding of Nitrate Movement below the Root Zone in Relation to Management Practices

Nitrogen movement and distribution in soil as it moves to groundwater is not well understood. This lack of information has led to incomplete modeling of the transport and fate of nitrate through agroecosystems and uncertainties in estimates of the quantity of nitrate from nitrogen fertilizers accumulating in groundwater. Additionally, research is needed to understand how management practices influence the movement and distribution of nitrate below the root zone. These studies can be conducted within any region of California, independently or in collaboration with Central Valley agricultural water quality coalitions to address the need for Management Practices Evaluation Program BMP testing and verification.

HOW TO APPLY

Concept proposals must not exceed two pages. Please include the following information:

- Project title, location, duration, and project leader(s) contact information (name, title, affiliation, mailing address, telephone number, and e-mail address).
- A simple and concise summary of the problem to be addressed.
- Description of the target audience.
- Region or County location where project work would be performed.
- Objectives of the proposed project
- A description of the general approach to be used.
- Estimated funding that will be requested

(Note: A budget is not required for concept proposals.)

Concept proposals are due by 5:00 p.m. on January 31, 2018. NO EXCEPTIONS GRANTED. Concept proposals must be submitted via e-mail; mailed and faxed copies will not be accepted.

Proposals that are incomplete, late, or exceed two pages will be returned and eliminated from consideration. Examples of successful concept proposals from previous years are available on the FREP website. FREP staff is available to answer questions about the proposal process; however, to ensure fair competition, we do not provide guidance on the development of proposals.

SENDING CONCEPT PROPOSALS

Submit an electronic version of your proposal to: FREP@cdfa.ca.gov

FREP staff will reply with a confirmation e-mail when concept proposals are received; contact us by calling (916) 900-5022 if you have not received a confirmation e-mail within two business days of your submission. FREP is not responsible for incomplete e-mail transmissions.

EVALUATION PROCESS

FREP has a Technical Advisory Subcommittee (TASC) consisting of subject matter experts who review and evaluate submitted concept proposals. The TASC selects concept proposals to be developed into full proposals based on alignment with the program's priority research areas, project concept, scientific merit, impact,

methodology, feasibility, and. FREP staff notifies applicants of the TASC decision and invites selected applicants to submit full proposals. Full proposals go through a peer review process and are evaluated by the TASC. TASC then sends their recommendations to the Fertilizer Inspection Advisory Board (FIAB). FIAB deliberates and discusses the TASC recommendations and decides whether to accept the TASC recommendations for proposed funding. FIAB recommendations are forwarded to the Secretary for approval and award of FREP grants. FREP staff initiates the grant agreements for the approved projects.

TIMELINE

Request for concept proposals announced..... December 14, 2017
Concept proposals due..... January 31, 2017
Advancement of concepts to full proposals announced..... March 20, 2017
Full proposals due..... May 16, 2017
Award notification by.....October 2, 2017
Project Initiation..... January 1, 2018

ADDITIONAL INFORMATION

FREP funds and facilitates research and education to advance the environmentally safe and agronomically sound use and handling of fertilizer materials. FREP serves growers, agricultural supply and service professionals, extension personnel, public agencies, consultants, and other interested parties.

This solicitation, as well as other information about FREP activities and sponsored projects, is available by contacting FREP staff at FREP@cdfa.ca.gov or (916) 900-5022, and by visiting the FREP website at http://www.cdfa.ca.gov/go/FREP.