

FFAR-OCP Disruptive Fertilizer Technology Fellows Request for Applications

Match is Optional for this Funding Opportunity

Key Dates

Full Application Receipt Open: June 14, 2023 by 12:00 PM ET

Full Applications Due: August 9, 2023 by 5:00 PM ET

Award Notification: Fall 2023

Anticipated Project Start Date: Winter 2023

Background

The demand for increased productivity in the agricultural sector to feed a growing global population, coupled with the uncertainty of a variable climatic condition and a decreasing availability of arable land and fresh water, emphasizes the urgency of introducing disruptive technologies which can improve productivity, nutritional quality, and environmental resilience.

Fertilizer is essential for the sustainable intensification of agriculture and investing in innovations that can improve fertilizer use efficiency will be critical to decrease costs, reduce environmental impacts and improve crop nutrient uptake. The plant nutrition space is complex and is ripe for disruption; improvements are needed in fertilizer technologies, precision fertilizer application methods, nutrient recommendation method and the land application of animal waste. Developing disruptive technologies for customized and enhanced efficiency fertilizers, such as the ability to develop the beneficial or symbiotic association with nitrogen fixing bacteria reducing reliance on synthetic nitrogen fertilizer, will be important. A deeper understanding of mechanisms controlling phosphorus mobilization in soils will ultimately lead to disruptive technologies, since enhanced efficiency fertilizers for phosphorous solubilization, driven by crop demand, will be critical for soil and plant health.

This competitive fellowship aims to spur and foster disruptive innovation in the next generation of fertilizer research and development, whereby emerging young scientists in

agriculture research will be identified, selected and funded through a 12-to-24-month period to support their efforts in fertilizer efficiency research and technology development. The technologies and research generated through this project would address the need for increasing plant uptake of essential macronutrients and limit the loss of inputs - which contribute largely to water and marine ecosystem damage - while boosting productivity.

Research Topics Supported

The FFAR OCP Fellows program will support research in the following areas:

- Gene editing/RNAi/Protein degradation approaches to enhance fertilizer use efficiency by plants.
- Decarbonizing fertilizer production: A “greener” ammonia for “greener” fertilizer
- Organic Fertilizers: Fertilizers qualified for organic certification with NPK macronutrients and/or organominerals.
- Intelligent Fertilizers: Nanofertilizers and “smart” fertilizers that supply specific plant nutrient needs in real time (based on chemical formulations, coating, etc.)
- Enhanced Efficiency Fertilizers: Slow-release and control-release fertilizers; stabilized fertilizers with a demonstrated limited nutrient loss at field-scale; combined chemical and organic compounds to improve efficiency.
- Biofertilizers: Chemical or biologicals that include highly agronomically efficient microbes such as phosphorus solubilizing bacteria, nitrogen-fixing bacteria, PGPRs, fungi and others and/or coating technology to improve long-lasting viability of microbes and feasibility of industrial production of biofertilizers.
- Biostimulants: Biostimulants that control and/or boost development and/or are effective in alleviating biotic and abiotic stress.
- Specialty products: Highly soluble fertilizers; highly efficient fertilizers for drip irrigation applications, foliar spray, and for specialty crops.

Program Structure

The FFAR OCP Fellowship will provide stipend support for up to three early career scientists (within up to ten years of receiving PhD) and seeks to enable high impact research in the focus areas of the project.

Awardees will receive a maximum of \$75,000 and will cover 12 to 24 months of funding to conduct projects in fertilizer efficiency research and technology development that have already demonstrated promise in a first phase of research and would clearly benefit from a catalytic push to achieve proof of concept or early product development to progress to a second phase.

The FFAR OCP Fellows Program will not support brand new research proposals without any prior history of research progress.

The awardees will also receive a certificate and be named as OCP-FFAR disruptive fertilizer technology fellows. Fellows may be extended the opportunity to partner with OCP and the Mohammed VI Polytechnic University in Morocco to co-develop novel fertilizer products that could be highly efficient both for high production and low input agriculture following the completion of the project.

Award Information

Matching funds are not required for this program

Anticipated Project duration: 12 to 24 months

- Total Amount for this opportunity: up to US \$75,000
- Estimated Number of Awards: up to three depending on the quality and budgets of successful proposals. FFAR reserves the right to negotiate all or none of the applications received for funding consideration under this opportunity.
- Anticipated Award Date: Winter 2023

Application Components

Required Components

Please reference [FFAR's Applicant Forms & Examples](#) webpage for samples and templates.

1. Organization Information
 - a. Geographic Location
 - b. Authorized Organizational Representative (AOR)
 - c. Grant Administrator
 - d. Press Contact
 - e. Governmental/Legislative Contact
2. Contact Information
 - a. Fellow/Principal Investigator (PI)
 - b. Key Personnel
3. Proposal Information
 - a. Project Title (up to 250 characters)
 - b. Key topics or areas of research to be covered in the nominee's program (50-word limit)
 - c. Project Start Date, End Date, and Duration (in months)
 - d. Geographic location where the proposed research will be conducted
 - e. Which research focus area does your project fall under? (Choose all that apply)
 - Gene editing/RNAi/Protein degradation approaches to enhance fertilizer use efficiency by plants
 - Decarbonizing fertilizer production: A "greener" ammonia for "greener" fertilizer
 - Organic Fertilizers: Fertilizers qualified for organic certification with NPK macronutrients and/or organominerals

- Intelligent Fertilizers: Nanofertilizers and “smart” fertilizers that supply specific plant nutrient needs in real time (based on chemical formulations, coating, etc.)
 - Enhanced Efficiency Fertilizers: Slow-release and control-release fertilizers; stabilized fertilizers with a demonstrated limited nutrient loss at field-scale; combined chemical and organic compounds to improve efficiency
 - Biofertilizers: Chemical or biologicals that include highly agronomically efficient microbes such as phosphorus solubilizing bacteria, nitrogen-fixing bacteria, PGPRs, fungi and others and/or coating technology to improve long-lasting viability of microbes and feasibility of industrial production of biofertilizers
 - Biostimulants: Biostimulants that control and/or boost development and/or are effective in alleviating biotic and abiotic stress
 - Specialty products: Highly soluble fertilizers; highly efficient fertilizers for drip irrigation applications, foliar spray, and for specialty crops
- f. Project Abstract
- g. Technical Merit and Feasibility
- i. What are your research aims and objectives? (up to 1000 words)
 - ii. Describe your research methods. (up to 5000 words)
 - iii. Describe your risk evaluation and risk mitigation plan. (up to 500 words)
 - iv. Describe your data management plan with a commitment to public access. (up to 500 words)
- h. Novelty and Innovation
- i. Describe your first phase of research in this area, and how this funding would provide a catalytic push to achieve proof of concept or early product development to progress to a second phase. (up to 1000 words)
 - ii. How does your proposal address a challenge related to our food supply or sustainable agriculture via improvement of soil health and responsible plant nutrition? (up to 1000 words)
 - iii. What step-change in next-gen fertilizer science and technology can be anticipated as a result of your research? (up to 1000 words)
- i. Impact and Outcomes
- i. Describe the potential impact and applied relevance of this research under high production or low input agriculture environments. (up to 1000 words)
 - ii. How FFAR is uniquely positioned to fund this project? (up to 500 words)
 - iii. Describe how this project emphasizes scalability, and how you plan to disseminate the project outcomes through potential leveraging of OCP group’s massive R&D and manufacturing infrastructure. (up to 1000 words)
 - iv. Describe how this project would provide training for the next generation of scientists (up to 500 words)
- j. Project Funding Overlap

4. Budget Details
 - a. Key Personnel Name, Institution, Role on Project
 - b. Total Budget Request
 - c. Total FFAR Funds Requested
 - d. Total Match Budget (Cash Match + In-Kind Match)
 - e. Total Cash Match (if applicable)
 - f. Total In-Kind (if applicable)
 - g. Budget justification: Provide a brief overview of the budget by task or objective. Address costs related to personnel, equipment, and facilities, and analytics. (up to 1000 words)
 - h. Project Budget by year
 - i. Subaward Information (if applicable)
5. Match Information (if applicable)
6. Organizational Assurances
7. Required Attachments
 - a. Budget Spreadsheet
 - b. Current and Pending Support
 - c. Project Timeline
 - d. References Cited
 - e. Biosketches
8. Optional Attachments
 - a. Matching Funds Contribution Letter/s (if applicable)
 - b. Additional Key Personnel
 - c. Graphics, Figures, Equations, and Tables
 - d. Letters of Support

Optional Attachments (This section should not be used to circumvent the word limit for other sections)

1. Matching Funds Contribution Letters (if applicable) - Please refer to the [FFAR website](#) for FFAR's Matching Guidelines and the Matching Funds Contribution Letter Template. Upload a single PDF that contains all of the required Matching Funds Contribution letter(s) for each of the Matching Contributor(s) listed in this application.
2. Additional Key Personnel - Applicants with more than three (3) key personnel must upload a table including the name, institution, expertise, role, email, and phone number of any additional key personnel in addition to the three (3) individuals listed on the Contact Information section of the online application.
3. Graphics, Figures, Equations, and Tables - The textbox for the Research Program Plan does not support equations, tables, graphics, and figures. Applicants may

upload a PDF document with graphics, figures, tables, or a list of equations to support the research program plan. (Five-page limit)

4. Letters of Support - Applicants may provide letters of institutional, collaborator, or stakeholder support for the proposed project. Please combine all letters of support into a single PDF document before uploading as an attachment.

Application Submission Guidelines

Applications must be submitted through FFAR's online Grant Management System. Applications not submitted through this portal will not be considered eligible for evaluation. To be fair to all our applicants, FFAR will not grant an extension to applicants who missed the deadlines posted in the Key Dates section.

To start a **new** application, please click [here](#). If you are a new user, register for an account by clicking the "Create Account" button located under the email address field on the left side of the home page. Once you log in, you may begin working on your application. Please be sure to save your work often by clicking on "Save and Finish Later". To access a **saved** application, please do so through your [Grant Management Account](#).

Full Proposal Review

Submitted full proposals will undergo a two-stage peer review process: (1) External Peer Review, and (2) FFAR/OCP Selection Committee Review. In the first stage, applications will be evaluated by an independent, external peer review panel of scientific experts using the proposal review criteria posted in this RFA. In the second stage, applications judged to be most meritorious by the external peer review panel will be evaluated and recommended for funding by the Selection Committee based on comparisons with applications from the same cohort and FFAR's program priorities. All reviewers are required to read and acknowledge acceptance of FFAR's [Conflict of Interest Policy](#) and [Non-Disclosure Agreement](#). We make reasonable efforts to ensure that proposals are not assigned to reviewers with a real or apparent conflict with the applicant or project personnel. Reviewers with a conflict of interests are recused from evaluating or participating in the discussions of proposals with which they have a conflict. Each stage of the review is conducted confidentially.

Applications recommended for funding by FFAR/OCP Fellowship Selection Committee will go to the FFAR's Scientific Program Director and Executive Director to consider program priorities set by the Soil Health Advisory Board, portfolio balance across programs, and available funding. FFAR/OCP Fellowship Selection Committee will vote to approve each grant award recommendation made by the Science Program Director and the Executive Director.

Review Criteria

Full proposals are evaluated based on scored primary review criteria and unscored secondary review criteria. The bullets under each criterion may serve as a guideline to applicants when writing their proposals, and as a guideline to reviewers on what to consider when judging proposals. The bullets are illustrative and not intended to be comprehensive. Reviewers will evaluate and score each primary criterion and subsequently assign a global score that reflects an overall assessment of the application. The overall assessment will not be an average score of the individual criterions; rather, it will reflect the reviewers' overall impression of the application. Evaluation of the scientific merit of each application is within the sole discretion of the peer reviewers and they may raise additional factors to consider that are not covered in the bullets for each criterion.

All proposals will be screened for relevance, accuracy, completeness, and compliance with FFAR policies. Applications must demonstrate the potential to meet the evaluation criteria.

- Project Fit: Does the research submitted fall under the [focus areas of research](#) supported in the RFA?
Yes or No – If No, application not scored.

Primary Review Criteria

Novelty, Innovation, and Originality (45%)

- Does the proposed project innovatively address a challenge related to our food supply or sustainable agriculture via improvement of soil health and responsible plant nutrition?
- Does the proposal challenge an existing paradigm(s) leading to a step-change in next-gen fertilizer science and technology?

Technical Merit and Feasibility (30%)

- Does the proposal clearly outline the aims and objectives?
- Does the proposal include appropriately thorough, tractable, and feasible methods?
- Has the principal investigator assembled a qualified research team with access to the cutting-edge field and laboratory facilities?
- Does the proposal present a tractable timeline and budget?
- Does the proposal include adequate risk evaluation and a mitigation plan?
- Does the proposal include an adequate data management plan with a commitment to public access?

Impacts and Outcomes (25%)

- Does the proposal adequately describe the potential impact and applied relevance of the research under high production or low input agriculture environments?
- Does the proposal identify how FFAR is uniquely positioned to fund this project?

- Does the proposal emphasize scalability and present a plan for disseminating the project outcomes by potential leveraging of OCP group's massive R&D and manufacturing infrastructure?
- Does the proposed project provide training for the next generation of scientists?

Secondary Review Criteria

Secondary criteria contribute to the global score assigned to the application. Concerns with these criteria potentially question the feasibility of the proposed research. Examples of secondary review criteria are, Budget, Duration of the project, Research Environment, Scalability and Dissemination, Protections for Human and Animal Subjects, and Previous Project Performance.

Award Administration

Selection Notice

Following the full proposal review, the principal investigator and the authorized organization representative listed on the project will be officially notified by email whether (1) the proposal has been selected for funding pending contract negotiations, or (2) the proposal has not been selected funding. If a proposal is selected for funding, the Foundation for Food & Agriculture Research reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to, matching funds if applicable, or other budget information. Potential grantees are free to accept or reject the Grant Agreement as offered.

Award Notice

FFAR notifies applicants of whether they are selected for funding through email. The notice does not constitute an award or obligate funding from FFAR until there is a fully executed Grant Agreement.

Grant Period(s)

Upon receipt of the Grant Agreement, the potential grantee should note the Start Date and the End Date. Grantees may only use FFAR funds on project expenditures on or after the Start Date of the Grant. Charging expenditures to the grant prior to the effective date is strictly prohibited. Likewise, grantees may not use FFAR funds after the End Date except to satisfy obligations to pay allowable project costs committed on or before that date.

Post-award Management

Reporting Requirements

Annual Reporting Requirements: After FFAR confers a grant, the grantee must provide annual scientific and financial progress reports. The report should include 1) activities carried out under the grant relative to the anticipated timeline presented in the grant application, 2) planned vs. actual budget expenditures, and 3) match verification. The

report also should highlight project accomplishments. Additional reporting of the level of adaptation practice adoption may be requested on a sub annual timeframe. Awardees will be provided with access to the required online forms.

Final Report Requirements: Within 90 days of completing the project, the grantee shall provide a final project report. This report should address the project objectives outlined in the original grant application, describe any modifications to the project objectives and scope, present the results and interpretation, describe the final project accomplishments, and include a final project accounting of all grant funds.

Scientific Integrity

FFAR's ability to pursue its mission to build unique partnerships to support innovative science addressing today's food and agriculture challenges depends on the integrity of the science on which it relies. A fundamental purpose of FFAR is to facilitate the advancement of knowledge and the application of the science to address challenges relevant to the FFAR's mission. All FFAR grants must be conducted with the highest standards of scientific integrity.

Grant Terms and Conditions

The Foundation for Food & Agriculture Research expects applicants to have reviewed the sample [Grant Agreement](#) prior to applying to ensure that the applicants are aware of the applicable terms under which the grant is offered. FFAR will only entertain potential modifications to the Grant Agreement under the most exceptional circumstances. Successful applicants are strongly encouraged to sign the Grant Agreement as presented.

Questions

FFAR only accepts scientific or programmatic, and grants inquiries by email. We strive to respond to inquiries within two business days, but our response time depends on the volume of questions we receive and the complexity of the questions asked. Please note that we do not monitor this mailbox on evenings, weekends, or federal holidays. All Scientific and Grants questions should be emailed to grants@foundationfar.org.