SEEDS: The CFAES Research Competitive Grants Program
for Graduate and Undergraduate Students

Fiscal Year 2020
Request for Proposals
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Request for Submission of Research Proposals

This is an invitation to submit research proposals to SEEDS: The CFAES Research Competitive Grants Program Student Competitions for fiscal year 2020.

The Ohio State University’s College of Food, Agricultural, and Environmental Sciences (CFAES) employs nearly 650 scientists and staff members who support CFAES’s research mission throughout the state. With a presence across the state of Ohio, including Columbus, Wooster, and nine research stations, the Ohio Agricultural Research and Development Center (OARDC) is CFAES’s comprehensive research enterprise. CFAES scientists work closely with researchers in Ohio State’s Colleges of Education and Human Ecology, Veterinary Medicine, and Arts and Sciences.

SEEDS awards are intended to accomplish the following objectives:

- Enhance and encourage creative and innovative research
- Increase the competitiveness of scientists in extramural grant programs
- Encourage partnerships with industry and other stakeholders
- Encourage the development of interdisciplinary teams
- Encourage international collaborations
- Provide undergraduate students with research experience
- Provide graduate students with the opportunity to take part in the grant-writing and proposal review process

All questions regarding SEEDS funding should be directed to:

Melissa Burant
Grants & Contracts Specialist
SEEDS Program Coordinator
614-292-5748
seeds@osu.edu
oardc.osu.edu/seeds

CFAES Research Committee Members

Macdonald Wick, Animal Sciences, Chair-Elect
Kristina Boone, Ohio State Agricultural Technical Institute
Amanda Bowling, Agricultural Communication, Education and Leadership
Joyce Chen, Agricultural, Environmental and Developmental Economics
Matt Davies, School of Environment and Natural Resources
Gary Gao, The Ohio State University Extension
Dennis Heldman, Food Science and Technology
Jordan Hoewischer, Ohio Farm Bureau Federation
Reed Johnson, Entomology
Alex Lindsey, Horticulture and Crop Science
Melanie Prarat, Ohio Department of Agriculture
Robert Scharff, College of Education and Human Ecology
Qihuong Wang, Food Animal Health Research Program
Ye Xia, Plant Pathology
Lingying Zhao, Food, Agricultural and Biological Engineering

Gary Pierzynski, Associate Dean for Research and Graduate Education, College of Food, Agricultural and Environmental Sciences, Ex-Officio
Lori Kaser, Grants and Contracts Administrator, College of Food, Agricultural and Environmental Sciences, Ex-Officio
Section 1: Grant Competition Categories & Eligibility

1.1 Undergraduate Research Program (maximum of $3,300 per award)

A. Objectives
- Provide undergraduate students the opportunity to gain experience with research methods in the food, agricultural and environmental sciences.
- Stimulate faculty-undergraduate collaborations and mentoring of students by Ohio State University faculty.
- Help identify students who have the potential for graduate school and research careers.

B. Eligibility
To be eligible for this program, students must:
- Be enrolled in the College of Food, Agricultural, and Environmental Sciences and have a primary faculty advisor with a CFAES appointment.
- Have completed the first year of studies and be in good academic standing.
- Not have received a previous SEEDS Director’s Undergraduate Research Award.

1.2 Graduate Research Program (maximum of $5,000 per award for single investigator; maximum of $10,000 per award for team project)

A. Objectives
- Provide graduate students with an opportunity to gain experience with research methods in food, agriculture, environmental sciences, human ecology and related social sciences.
- Introduce graduate students to the grant-writing and peer-review processes.
- Stimulate faculty-graduate student collaborations and mentoring of graduate students by CFAES faculty.
- Stimulate collaborations across disciplines among graduate students, preparing them for future interdisciplinary work.
- Identify students who have the potential for research careers.

B. Eligibility
To be eligible for this program, students must:
- Be enrolled throughout the duration of the project as a graduate student in one of the following colleges at Ohio State: CFAES, Education and Human Ecology or Veterinary Medicine.
- Have a primary faculty advisor with a CFAES appointment.
- Be in good academic standing, have at least nine months left in their program and not plan to graduate prior to December 2020.
- To be eligible for the team competition, applications must include a minimum of two graduate students.
- Students are eligible to receive only one grant every three years.

C. Investigators
Graduate students may either complete the research independently or as part of a team. Team projects must include at least two investigators. Roles and responsibilities must be clearly expressed.
Section 2: Submission Requirements

2.1 Deadlines

Proposals submitted after the deadline will be automatically eliminated from consideration.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 13, 2019</td>
<td>Undergraduate Proposals</td>
</tr>
<tr>
<td>December 18, 2019</td>
<td>Graduate Proposals</td>
</tr>
</tbody>
</table>

*All proposals are due by 5:00 p.m. on the deadline date. No exceptions.*

2.2 Submission Process

All proposals are to be submitted online through the SEEDS website (oardc.osu.edu/seeds). The online submission process automatically closes at 5:00 p.m. on the deadline date. **Proposals submitted after 5:00 p.m. will not be accepted.** Portions of a proposal will not be accepted after the stated deadline. Faxed or emailed submissions are unacceptable and will be automatically disqualified.

Give yourself ample time to submit as you will need to complete the initial registration screens before uploading and submitting the proposal.

**Online submission requires that you prepare your proposal as a single PDF file.** Once your proposal is prepared as a PDF, simply go to oardcosu.edu/seeds, click on “submit a proposal” and follow the instructions. We strongly recommend that you check your work prior to submitting your proposal.

The screen that appears after you click on the submit button is your receipt. The receipt will provide you with the number of your proposal (e.g., 2020-####) and the date and time of receipt. We encourage you to save your receipt. **No technical or administrative questions will be answered by the SEEDS Coordinator on the day of submission unless they are related to website submission issues.**

2.3 Proposal Format and Required Content

All proposals should be set to print on standard 8.5-inch by 11-inch paper. All margins must be at least 1-inch. Type size must be 12-point or larger with no more than six lines per inch, single-spaced. All pages should be numbered.

**Note:** Margins and 12-point type size must be consistent throughout each required section of the proposal. This includes figure and table captions. Portions of the project narrative that exceed the project narrative page limit; and any additional documents, forms or appendices not requested in the RFP, will be removed without review.

A sample cover page and required budget forms are available at oardcosu.edu/seeds.

A. Cover Page (Limit to one page)
Include the following items:
- Name of the grant category/competition to which you are applying
- Title of the project
- A complete campus address, telephone number and email address for each investigator and faculty advisor
- Anticipated start date and duration of the project
- The amount of SEEDS funding being requested
- Brief lay summary — consisting of 250 words or less — explaining the purpose, relevance and expected outcome of the proposed study. In the summary, highlight the potential impact or benefits of the research, and write the summary so that it is understandable to the average reader.
B. Table of Contents
Each proposal must contain a table of contents. Number all pages of the proposal (including those outside of the page limitations) and provide the page numbers for each section.

<table>
<thead>
<tr>
<th>Project Narrative Page Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competition</strong></td>
</tr>
<tr>
<td>Undergraduate</td>
</tr>
<tr>
<td>Graduate</td>
</tr>
<tr>
<td>Graduate Team</td>
</tr>
</tbody>
</table>

C. Project Narrative
Include in each project narrative 1) an introduction, 2) a rationale and significance and 3) an approach.

1. INTRODUCTION
Introduce the topic in broad terms. Why is this work important? How will it improve upon the existing literature? Outline the goal(s) and objective(s) of the project and the expected outcomes.

Summarize the current status of research and the most significant published work in this field. Include preliminary data/information pertinent to the proposed project. Be sure to reference all works cited throughout.

This section should contain the bulk of the literature review.

2. RATIONALE AND SIGNIFICANCE
Concisely present the rationale behind the proposed research. What is the impact of this work?

Identify how this research addresses the CFAES vision (https://cfaes.osu.edu/about-cfaes/vision) and the broader implications faced by Ohio, the nation and the world.

Describe any innovative features or unique combinations of expertise of the investigators involved in the proposed project, particularly for team science projects.

3. APPROACH
Plainly state the activities proposed or problems being addressed, and clearly describe the approaches applied.

This section should be composed of the following parts:

Research Design and Data Analysis
- Activities proposed and the sequence in which the activities will be performed
- Methods that will be used – including the feasibility of the methods – in carrying out the proposed project. Clearly state the planned methods for processing and/or analyzing collected data to address the research objectives and hypotheses
- Explain and justify intended procedures for data analysis/interpretation. Specify measurable outcomes or data collection
- Identify any potential pitfalls that may be encountered
- If a specific analysis method is not used or planned, explain the rationale and justify this practice

Project Management
- Roles and responsibilities of each person named as an investigator or key person, including the amount of time each investigator or key person will be contributing to the project. Team Science
submissions, in particular, must contain detailed information concerning the diversity of the team and provide detailed mentoring information, if applicable
- Means of applying results or accomplishing technology transfer, where appropriate

D. References
In this section, reference all works cited throughout the text. All references must be complete (i.e., must include titles and all co-author names) and must conform to an acceptable journal format. There is no page limit to the references section.

E. Schedule of Activities
Provide an outline of activities and an indication of the time it will take to complete each task.

Undergraduate projects should begin after March 1 and must be completed within one year.

Graduate projects should begin after April 1 and must be completed within two years. Team projects should include descriptions of planned interactions to ensure proper feedback and integration of knowledge as the study progresses.

F. Location, Facilities and Equipment
Explain where the research will be conducted and what equipment and facilities will be available to do the research. Projects not completed on the Wooster, Columbus or Piketon campuses must be constructed under the guidance of a CFAES faculty advisor. If the project is to be conducted somewhere other than on university property, if parts of the project will be performed in a lab other than that of your faculty advisor or if you will be visiting another institution to learn a special technique, then a letter from the property owner or person in charge of where the work/training will be conducted must be included.

G. Budget
Use the form provided on the SEEDS website (oarc.osu.edu/seeds).

This budget should indicate materials, supplies, travel, and other expenses required to complete the research. Use separate columns for each year of the project.

Graduate students may not use SEEDS funds for salary or fringe benefits. Graduate students can request funding for travel to one conference or poster presentation only. Graduate budgets cannot include salary or fringe benefits for undergraduate student workers.

Undergraduate students will receive a maximum of $2,800 for wages and applicable fringe benefits and a maximum of $500 for supplies and travel.

If your department is providing supplemental funds, indicate the amount and how those funds will be used.

H. Budget Narrative
Provide a detailed summary itemizing your expenditures and detailing their purpose within the project. The more detail provided, the easier it will be for reviewers to evaluate. Your budget sheet and budget justification should add up to the same amount.

I. Current Funding
List any current funding for each investigator, including OARDC, CFAES, or OSU scholarships, fellowships, associateships, grant funding, etc.
J. Curriculum Vitae for Each Investigator (Graduate Students only)
Provide a curriculum vitae (CV) for each investigator. **Each CV should be no longer than two pages and should include:**
- Education
- Employment history
- Honors and awards
- Selected recent or most relevant publications

K. Letter of Support (Undergraduate Students only)
Letters of support are to be from the student’s CFAES advisor. Faculty should prepare letters of support only after consultation with the student regarding his/her project and after a careful review of the research proposal.

Letters should be detailed and contain the following information:
- Specific information pertinent to the student’s abilities and background
- Significance of the project and method of approach
- An indication of the advisor’s approval of the student’s outlined time to be spent in the laboratory and that the advisor agrees to work with the student
- A statement regarding the potential for the student to achieve the anticipated results within the project period
- An indication that the location, facilities and supplies are available

L. Advising Report
Print a copy of your Advising Report from buckeyelinkosu.edu. This can be an unofficial copy.

M. Information Form
Complete the Undergraduate or Graduate Information Form, as appropriate. This form requires signatures from various people, so allow yourself time to obtain those signatures. Scan the form and attach it to the end of your completed proposal. This form can be found online for undergraduates [http://go.osu.edu/SEEDSundergrad](http://go.osu.edu/SEEDSundergrad) and graduates [http://go.osu.edu/SEEDSgrad](http://go.osu.edu/SEEDSgrad).
All sections of the proposal should be combined into a single PDF before uploading.

<table>
<thead>
<tr>
<th>Item</th>
<th>Page Limit</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Cover Page</td>
<td>1</td>
<td>See SEEDS website for format.</td>
</tr>
<tr>
<td>B Table of Contents</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>C Project Narrative</td>
<td>Undergraduate (5) Graduate Individual (6) Graduate Team (7)</td>
<td>Include in the project narrative 1) an introduction, 2) a rational and significance and 3) an approach.</td>
</tr>
<tr>
<td>D References</td>
<td>n/a</td>
<td>Include only those articles, books, or reports cited within the proposal. References must be presented in an accepted journal format.</td>
</tr>
<tr>
<td>E Schedule of Activities</td>
<td>n/a</td>
<td>Provide an outline of activities and an indication of the time it will take to complete each task.</td>
</tr>
<tr>
<td>F Location, Facilities, and Equipment</td>
<td>n/a</td>
<td>Explain where the research will be conducted and what equipment and facilities will be available to do the research. Include a letter of support from off-campus entities, if required.</td>
</tr>
<tr>
<td>G Budget</td>
<td>n/a</td>
<td>See SEEDS website for required format.</td>
</tr>
<tr>
<td>H Budget Narrative</td>
<td>n/a</td>
<td>Justify all expenses, including matching funds if applicable.</td>
</tr>
<tr>
<td>I Current Funding</td>
<td>n/a</td>
<td>List any current funding you have, including scholarships, fellowships, associateships, grant funding, etc.</td>
</tr>
<tr>
<td>J Curriculum Vitae</td>
<td>2 per investigator</td>
<td>(GRADUATE only) Provide a CV for each investigator.</td>
</tr>
<tr>
<td>K Letter of Support</td>
<td>n/a</td>
<td>(UNDERGRADUATE ONLY) Include letter of support from faculty advisor.</td>
</tr>
<tr>
<td>L Advising Report</td>
<td>n/a</td>
<td>Print from buckeyelink.osu.edu. Can be an unofficial copy.</td>
</tr>
<tr>
<td>M Information Form</td>
<td>n/a</td>
<td>Requires signatures.</td>
</tr>
</tbody>
</table>

* Portions of the project narrative that exceed the project narrative page limit; and any additional documents, forms or appendices not requested in the RFP, will be removed without review.
Section 3: Review, Grant Awards and Post-Award Administration

3.1 Undergraduate Review
Proposals that meet the eligibility and submission requirements will be reviewed for funding by members of the Research Committee and others as necessary. The criteria listed here will be used to evaluate undergraduate research proposals.

- Is the science outlined in the proposal appropriate and of high quality?
- Are the anticipated outcomes clearly stated?
- Does the proposed project address problems of importance to agriculture, the food industry, the environment or related social sciences?
- How likely is the proposed research to produce tangible results within the project period (e.g., within the beginning and ending dates and within the time allotted in the laboratory)?
- How will the results of the proposed research be disseminated upon completion of the project?
- Is the proposal well written and easy to understand?
- The strength of the faculty collaborator’s letter of recommendation.
- Did the student’s proposal follow the instructions outlined in this RFP?

3.2 Graduate Review
Each proposal will be reviewed by multiple members of the Graduate Panel. Members of the panel include past SEEDS recipients and other graduate student representatives. Reviewers will provide a numerical score on a scale of 1-5 in five categories as well as an overall score. They will also list strengths and weaknesses of the proposal. Once these scores are calculated, deductions may be made if there are problems with formatting, page/word limits, or missing sections. These scores do not necessarily determine funding but will be used as part of the review process.¹ The Graduate Panel meets in March to review and rank proposals and make funding recommendations.

Questions used to guide the conversation at panel meetings:
- Is the science outlined in the proposal appropriate and of high quality?
- Is the proposal well written and easy to understand?
- Is the proposal well thought out? Are limitations, possible difficulties and solutions discussed realistically?
- Does the proposed project address a relevant issue(s) in agriculture, the food industry, and/or the environment?
- How likely is the proposed research to produce tangible results within the project period? Are anticipated outcomes clearly stated?
- How will the results of the proposed research be disseminated upon completion of the project?
- Is the budget appropriate and will it cover the expected expenses?
- Additional Team Criteria:
  - Does the proposal clearly outline the roles and responsibilities of each student?
  - Does the proposal integrate distinct disciplines in a cohesive manner?

Written comments by the reviewers will be used by the review panel to assist them with making funding recommendations. All written comments will be provided to applicants; however, the names of reviewers will remain anonymous.

3.3 Grant Awards
Within the limits of available funds, awards will be made to applicants whose proposals are judged most meritorious under the evaluation criteria. The CFAES Finance Office will provide an account to your departmental fiscal officer. All expenses are to be approved by your faculty advisor and processed through the department fiscal officer. Faculty advisors are responsible for any expenditures that exceed the award amount. Successful applicants are expected to participate in future review processes.

Undergraduate students receiving an award must turn in a weekly timesheet signed by their faculty collaborator. Wages will

¹Due to an overwhelming number of proposals in recent years, these scores were used in selecting the top proposals to send to the panel for further review and ranking.
be paid every other week.

3.4 Post-Award Administration
Undergraduate students who receive an award are required to enroll in a Research with Distinction course (4999) through the department in which research is being conducted. The number of credit hours and course plan will be set by the faculty collaborator.

Authorization to make changes in approved project plans, budgets or periods of support can be granted only by the SEEDS Program Coordinator.

For projects spanning two years, an annual report of progress is required and is due one year following the initiation of the grant project. Accounts with remaining funds after the 90-day closeout will be reviewed and funds will be returned and reinvested in the SEEDS program.

A final report must be submitted to SEEDS within 30 days of completion of the project. This report should contain a brief lay summary of how you conducted your research and what your results indicated. Near the end of your project, a reminder with instructions will be sent. The final report should be submitted through the SEEDS website (oarc.osu.edu/seeds).

The submission of reports on a timely basis is absolutely critical to our accountability process and directly impacts our capacity to receive future funding for this program. Any investigator with an outstanding annual or final report will be automatically disqualified from all competitions and further funding until reporting obligations are met. Additionally, faculty advisors to students with overdue SEEDS reports, will also be ineligible for new SEEDS funding for themselves or for other student projects until the overdue report is filed. Departments of investigators will be held responsible for any expenditure beyond the approved budget. The best policy is to keep track of funding and not overspend.

SEEDS accounts are subject to review to ensure that appropriate, approved budgeted costs are applied to the project. The PI and Department will cover any unauthorized costs.

3.5 Acknowledgments
All publications and posters resulting from work done using SEEDS funding are required to include the following acknowledgment: “This research has been supported by funds appropriated by the Ohio General Assembly to The Ohio State University, College of Food, Agricultural, and Environmental Sciences.”

3.6 Research Risks
The Office of Research (OR) is now requires that all eligible personnel (faculty, staff, and students) complete the online Responsible Conduct of Research (RCR) course through the CITI website. All students must complete this in order to receive funding. Please contact Lori Kaser.37@osu.edu with questions. Access CITI: http://go.osu.edu/citi

Protection policies are designed to comply with federal regulations and to protect humans, animals and the environment from potential hazards. The university has extended this requirement to all activities, whether funded or not, that are carried out by faculty, staff or students at The Ohio State University. If your project identifies the use of human or animal subjects or other potential research risks, indicate what steps have been taken to ensure that you are in compliance with university policy.

The Office of Responsible Research Practices also supports the institution in promoting ethical conduct of research and educating Ohio State students, faculty and staff regarding research regulations. The website for Ohio State’s Office of Responsible Research Practices is orrp.osu.edu.

3.7 Questions and Contact Information
All questions relating to SEEDS funding opportunities should be referred to:

Melissa Burant
SEEDS Program Coordinator
seeds@osu.edu