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

Fiscal Year 2018
Request for Proposals
# CONTENTS

Request for Submission of Research Proposals.........................................................................................1

Section 1: Grant Competition Categories & Eligibility ..................................................................................2
  1.1 Undergraduate Research Program ...........................................................................................................2
  1.2 Graduate Research Program ...................................................................................................................2

Section 2: Submission Requirements .............................................................................................................3
  2.1 Deadlines ................................................................................................................................................3
  2.2 Submission Process .................................................................................................................................3
  2.3 Proposal Format and Required Content ................................................................................................3

Section 3: Review, Grant Awards and Post-Award Administration .................................................................8
  3.1 Undergraduate Review .............................................................................................................................8
  3.2 Graduate Review .....................................................................................................................................8
  3.3 Grant Awards .........................................................................................................................................8
  3.4 Post-Award Administration ....................................................................................................................9
  3.5 Acknowledgments ...................................................................................................................................9
  3.6 Research Risks .......................................................................................................................................9
  3.7 Questions and Contact Information ........................................................................................................9
Request for Submission of Research Proposals

This is an invitation to submit research proposals to SEEDS: The OARDC Research Enhancement Competitive Grants Program Student Competitions for fiscal year 2018.

As the research arm of The Ohio State University’s College of Food, Agricultural, and Environmental Sciences (CFAES), the Ohio Agricultural Research and Development Center (OARDC) employs nearly 650 scientists and staff members throughout the state — conducting research that benefits all Ohioans. OARDC’s Wooster campus is the largest agbioscience research facility in the United States. Although the majority of OARDC scientists are affiliated with CFAES, several are also located 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

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**OARDC Research Committee Members**

Mary Gardiner, *Entomology, Chair*

Macdonald Wick, *Animal Sciences, Chair-Elect*

Larry Antosch, *Ohio Farm Bureau Federation*

Kristina Boone, *Ohio State Agricultural Technical Institute*

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*

Alex Lindsey, *Horticulture and Crop Science*

Melanie Prarat, *Ohio Department of Agriculture*

Mary Rodriguez, *Agricultural Communication, Education and Leadership*

Sudhir Sastry, *Food, Agricultural and Biological Engineering*

Robert Scharff, *College of Education and Human Ecology*

Qiuhong Wang, *Food Animal Health Research Program*

Ye Xia, *Plant Pathology*

Charles Goebel, *Interim 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*

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All questions regarding SEEDS funding should be directed to:

Melissa Burant
SEEDS Program Coordinator
614-292-5748
seeds@osu.edu
oardc.osu.edu/seeds
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 an OARDC or 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 OARDC and CFAES faculty.
   • Stimulate collaborations across disciplines among graduate students, preparing them for future interdisciplinary work.
   • Identify students who have the potential for graduate school and 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 an OARDC or CFAES appointment.
   • Be in good academic standing, have at least nine months left in their program and not plan to graduate prior to December 2018.
   • 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. Priority will be given to proposals that include team members from different academic disciplines. Roles and responsibilities must be clearly expressed.
Section 2: Submission Requirements

2.1 Deadlines

<table>
<thead>
<tr>
<th></th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 20, 2017</td>
<td>Undergraduate Proposals</td>
</tr>
<tr>
<td>February 14, 2018</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 oardc.osu.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., 2018-###) and the date and time of receipt. We encourage you to save your receipt. If you experience any problems or have any questions, please contact the SEEDS Program Coordinator and reference the provided proposal number.

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.

A sample cover page and required budget forms are available at oardc.osu.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>Competition</th>
<th>Maximum Number of Pages</th>
</tr>
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<tbody>
<tr>
<td>Undergraduate</td>
<td>4</td>
</tr>
<tr>
<td>Graduate</td>
<td>6</td>
</tr>
<tr>
<td>Graduate Team</td>
<td>8</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.

2. RATIONALE AND SIGNIFICANCE
Concisely present the rationale behind the proposed research.

Identify how this research addresses the mission of CFAES 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.

This section should contain the bulk of the literature review.

3. APPROACH
Provide a detailed description of the research approach. State the overall experimental design, including statistical model, if necessary.

This section should be composed of the following parts:

Data collection or generation
- 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
- Specific, measurable outcomes
- Pitfalls that may be encountered
- Limitations to proposed procedures

Data analysis
The means by which collected data forms a vital, and often overlooked, component of a research plan. Whilst it is acknowledged plans for data analysis may change as a project develops, initial procedures should be described in adequate detail. Applicants should:
- Clearly state expected outcomes or hypotheses
• Explain and justify intended procedures for data analysis/interpretation
• Link analytical procedures to the attainment of previously specified objectives

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 June 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 or Columbus campuses must be constructed under the guidance of an OARDC/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 [oardc.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.

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.

I. Curriculum Vitae for Each Investigator (Graduate Students only)
Provide curriculum vitae (CV) for all investigators. Each CV should be no longer than two pages and should include:
• Education
• Employment history
• Honors and awards
• Selected recent or most relevant publications
J. Letter of Support (Undergraduate Students only)
Letters of reference are to be from the student’s OARDC/CFAES advisor. Faculty should prepare letters of reference 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

K. Advising Report
Print a copy of your Advising Report from buckeyelink.osu.edu. This can be an unofficial copy.

L. 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] and graduates [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>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>See SEEDS website for format.</td>
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<tr>
<td>B</td>
<td>n/a</td>
<td></td>
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<tr>
<td>C</td>
<td>Undergraduate (5) Graduate (8)</td>
<td>Include in the project narrative 1) an introduction, 2) a rational and significance and 3) an approach.</td>
</tr>
<tr>
<td>D</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</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>
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<tr>
<td>F</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</td>
<td>n/a</td>
<td>See SEEDS website for required format.</td>
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<tr>
<td>H</td>
<td>n/a</td>
<td>Justify all expenses, including matching funds if applicable.</td>
</tr>
<tr>
<td>I</td>
<td>2 per investigator</td>
<td>(GRADUATE only) Provide a CV for each investigator.</td>
</tr>
<tr>
<td>J</td>
<td>n/a</td>
<td>(UNDERGRADUATE ONLY) Include letter of support from faculty advisor.</td>
</tr>
<tr>
<td>K</td>
<td>n/a</td>
<td>Print from buckeyelink.osu.edu. Can be an unofficial copy.</td>
</tr>
<tr>
<td>L</td>
<td>n/a</td>
<td>Requires signatures.</td>
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</table>
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. The Graduate Panel meets in May 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 fiscal officer. Faculty advisors are responsible for any expenditures that exceed the award amount. Successful applicants are expected to participate in future review processes.

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Due 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.
Undergraduate students receiving an award must turn in a weekly timesheet signed by their faculty collaborator. Wages will 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 and accomplishments is required and is due one year following the initiation of the grant project.

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.

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. 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.

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, Ohio Agricultural Research and Development Center.”

3.6 Research Risks
All students must complete the Responsible Conduct of Research training through BuckeyeLearn (buckeyelearn.osu.edu) in order to receive funding.

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
614-292-5748
seeds@osu.edu
oardc.osu.edu/seeds