

CSF - Mini Grant Final Application

Indigeponics - Community Food Resiliency Project

Grant Type

Mini Grant

Application Type

Final Application

Primary Project Manager

The Primary Project Manager is responsible for completing this application, answering questions posed by the Campus Sustainability Fund Committee, and completing all required reporting on project progress and outcomes. If the Primary Project Manager is a student who graduates in May 2023, the Secondary Project Manager must be a staff or faculty member OR a student who graduates after May 2023.

Primary Project Manager Name:

Chantel Harrison

Primary Project Manager Status:

Student

Primary Project Manager Email:

chantelharrison@arizona.edu

Primary Project Manager Department

Graduate Interdisciplinary Program, GIDP

Secondary Project Manager

The Secondary Project Manager is the back-up for the Primary Project Manager if they are unable to complete any of the requirements of the Campus Sustainability Fund, particularly completing required reporting on project outcomes. Alternatively, the Secondary Project Manager could be co-facilitating the project with the Primary Project Manager should the proposal require or desire to have two Project Managers.

Secondary Project Manager Name:

Jaymus Lee

Secondary Project Manager Email:

jaymuslee@arizona.edu

Secondary Project Manager Status:

Student

Secondary Project Manager Department

Graduate Interdisciplinary Program, GIDP

Project Advisor Name:

Projects where the Primary and Secondary Project Manager are both students require the involvement of a staff or faculty member within project's Fiscal Officer's department. The Project Advisor contact must be a staff or faculty member within your department who is responsible for monitoring the project's budget, communicating with the Fiscal Officer, and reporting if both project managers are unavailable. Please ensure you have received consent from this individual to be the Project Advisor for your proposal and have informed them of your proposal's intent and budgetary needs. If this does not apply to you, type N/A for these responses.

Caitlyn Hall, PhD

Project Advisor Email:

cahall@arizona.edu

Project Advisor Department:

Biosystems Engineering

Fiscal Officer:

The Fiscal Officer is a staff member within your department who is responsible for financial transactions and who will support reporting by pulling requested expenses against awarded funding and ensuring that funding is spent within awarded categories. Please coordinate with your department to properly identify an individual who is a designated Fiscal Officer. If awarded, this will be the individual who will help you access your project's funding. Please ensure you have received consent from this individual to be the Fiscal Officer for your proposal and have informed them of your proposal's intent and budgetary needs.

Darren Shevchuk

Fiscal Officer Email:

shevchuk@arizona.edu

Fiscal Officer Department Name:

Biosystems Engineering

Request Funding Amount:

\$5,000 (FY23)

Official Project Name:

Please be specific but concise as this name will appear on reports and our website. Creativity is encouraged!

Indigeponics - Community Food Resiliency Project

Primary Project Category:

Social Sustainability (including Social/Environmental Justice)

Secondary Project Category:

Food

Background and Context:

Please provide any relevant background about your organization/team including your mission and/or expertise. Please also lay out the rationale for the proposed project, focusing on the issue that your project would address. This section is meant to give us more information about you and the context for the project, while the questions below provide space to go into detail about your proposal's specifics.

Response:

Mission Statement:

Our mission at Indigeponics is to promote sustainable food production and bridge the gap between controlled environment agriculture and indigenous communities. We strive to empower indigenous individuals and communities to grow their own fresh produce using innovative technologies and sustainable practices, while also providing educational training and support to indigenous community members at large and at UArizona.

Rationale:

As mentioned previously, indigenous individuals and communities face numerous socioeconomic challenges when it comes to food sovereignty and sustainable agriculture practices. One solution to these challenges is the adoption of controlled environment agriculture (CEA) technologies. However, many urban and rural indigenous individuals and communities lack the resources and knowledge needed to successfully implement these technologies. At Indigeponics, we recognize the importance of not only providing resources and support to indigenous communities but empowering individuals and communities to further strengthen their sovereignty through food security and potential economic development opportunities. That is why we prioritize educational training as part of our mission. Our team includes professionals with a PSM in Controlled Environment Agriculture from the department of Biosystems Engineering, who are well-equipped to provide training and guidance on CEA technologies. Additionally, the team has completed the Indige-FEWSS NSF fellowship, which focused on developing the next generation of scientists and engineers to work with and within Indigenous communities to address food-energy-water challenges. The team also has experience working directly with indigenous individuals and families and tribal communities, which has given them a deeper understanding of the unique needs and challenges. By sharing knowledge and experience through educational training, we hope to empower the next generation of professionals to work effectively with both urban and rural indigenous communities to promote sustainable agriculture practices that benefit both the environment and the people who depend on it.

Project Description:

Please provide a thorough description and explanation of your project. Describe the objective(s) and what will be accomplished. Describe how each objective will be achieved (listed as steps or goals, with anticipated timeframes for each). Explain how the project will be implemented (who does what?). Finally, please identify the core goals of your project and how you will measure the degree of its success includes the metrics you will track to measure the success or impact of your project (e.g., number of kWh saved, gallons of water saved, number of student training hours, etc.). Responses are limited to 3,000 characters including spaces.

Response:

Objective 1: Provide educational offerings centered on a variety of sustainable hydroponic growing systems

- Goal 1: Develop educational materials (e.g. curriculum, guides, manuals) on sustainable hydroponic growing systems within the first 2 months of the project. To achieve this objective, Indigeponics will collaborate with the UArizona biosystem engineering faculty to develop culturally relevant educational materials that are centered on

sustainable hydroponic growing systems. These materials will be used to deliver training and workshops for indigenous campus community members.

- Success measurement: Number of indigenous community members trained on sustainable hydroponic growing systems and CEA.
- Metrics to track success: Number of workshops and training sessions delivered, number of educational materials distributed, and participant feedback.

Objective 2: Provide free technical training opportunities via workshops and demonstrational videos for indigenous campus community members

- Goal 1: Develop technical training materials (e.g., videos, manuals) on hydroponic growing systems within the first 3 months of the project.
- Goal 2: Deliver training sessions on hydroponic growing systems for indigenous campus members within the first 2 months of the project. To achieve this objective, Indigeponics will develop technical training materials on hydroponic growing systems for the target audience. These materials will include videos and manuals that provide step-by-step instructions on how to set up and maintain home hydroponic growing systems. Indigeponics will also deliver training sessions to ensure that participants have a sound understanding of the technical aspects of hydroponic growing systems.
 - Success measurement: Increased knowledge and skills of indigenous students, staff, and faculty on hydroponic growing systems.
 - Metrics to track success: Number of training sessions delivered, number of technical training materials distributed, participant feedback, and post-training assessments.

Objective 3: Develop and maintain meaningful relationships with indigenous-led UArizona and local organizations to bridge the gap between local sustainable food efforts regarding food production and accessibility of healthy foods.

- Goal 1: Identify and collaborate with indigenous-led campus organizations to promote sustainable agriculture practices within the 2 months of the project.
- Goal 2: Maintain ongoing relationships with indigenous-led campus and local organizations to measure the sustainability of the project past the 3-month mark. To achieve this objective, Indigeponics will identify and establish relationships with organizations that are focused on promoting sustainable agriculture practices.
 - Success measurement: Successful partnerships with indigenous-led campus and local organizations.
 - Metrics to track success: Number of partnerships established, number of collaborative projects initiated, and feedback from partner organizations.

Project Summary Snapshot:

Please provide a short summary of your project. This summary will be used on our new website and other Office of Sustainability materials, if approved. Think of this as a hyper-concentrated summary to capture your project's scope and impact..

Response:

The Indigeponics: Community Food Resiliency Project is an indigenous student-led initiative that aims to provide educational offerings centered on sustainable hydroponic growing systems from an indigenous perspective to increase diversity and inclusion within the field of Controlled Environment Agriculture.

Project Feasibility and Logistics:

Please provide a description of the work that has been completed so far to make this project feasible. Have all relevant partners been contacted/coordinated with? Have you received consent or authorization from relevant departments or offices to complete your project (Housing and Residence Life, Facilities Management, Parking and Transportation, etc.)? Please identify them in your response. For example, have you received reasonable quotes for supplies? What research has been completed to lay the foundation for this project?

Response:

As part of the larger Indigeponics Project, a greenhouse at the Controlled Environment Agricultural Campus, CEAC, has been equipped with four hydroponic systems to be utilized for both research and community engagement opportunities with support from the Biosystems Engineering Department. Additionally, Drs. Hook, Hall, and Kacira are supportive of hosting two workshops at the CEAC with tentative dates listed below. For budgetary considerations, an estimated expense for the hydroponic supplies that will be demonstrated and provided at each workshop was calculated based on the

suppliers' website. We also have connections in place to print Indigeponics CEA workbooks and other materials as needed. Other expenses, such as the website that will primarily be used to share educational and demonstrational materials will be developed by the graduate student team. To support our efforts, a non-profit organization has offered to assist us with graphic design elements, such as the Indigeponics logo, which will be created by an indigenous artist for our project. Overall, we do not foresee any major setbacks or challenges in implementing the activities within the timeline described.

Environmental Sustainability Outcomes:

Please provide a description of how you expect your project to advance environmental sustainability on campus. A definition of environmental sustainability is provided on our Resources webpage.

Response:

The overall environmental sustainability outcomes of the Indigeponics: Community Food Resiliency Project are to expand campus knowledge about sustainable food production on a micro and macro scale utilizing CEA and hydroponic systems.

1. The primary outcome is to demonstrate how CEA can be utilized to decrease water usage for food production in the southwest.
2. The second outcome is to educate others about the pros and cons of utilizing CEA within the Tucson climate.
3. The third outcome is to demonstrate how individuals can utilize hydroponic systems to increase microscale food production to decrease food miles and home water usage for food production.

Social Sustainability Outcomes:

Please provide a description of how you expect your project to advance environmental sustainability on campus. A definition of social sustainability is provided on our Resources webpage.

Response:

The social outcomes of the Indigeponics: Community Food Resiliency Project is grounded in creating a welcoming inclusive space for indigenous campus community members to learn about CEA.

1. The primary outcome is to provide educational offerings and hands-on experiences at an appropriate level to increase campus engagement at the CEAC.
2. The secondary outcome is to increase representation within CEA by including cultural and traditional aspects of food production that maintain respect for all relatives, such as water, land, and plants.
3. The third social outcome is to connect how CEA can be utilized for developing local food systems, which can then increase food accessibility within indigenous urban and rural communities.
4. The fourth social outcome is to showcase how CEA can be complimentary in promoting food sovereignty efforts.
5. Lastly, on an individual level, the anticipated social outcome is to empower individuals with skills, knowledge, and resources within a highly technological field of study to encourage engagement in STEM while promoting aspects of indigenous wellness concepts based on physical movements and healthy food consumption.

Overall, we aim to decrease the social and academic barriers that indigenous individuals overcome to access support, CEA knowledge, and equitable learning experiences.

Student Leadership & Involvement:

Please provide a description of how you expect your project to benefit students on campus regarding the creation of leadership opportunities or student engagement. What leadership opportunities exist within your proposal? If you plan to hire/ or involve students, please describe in what capacity. For example, if you plan to hire students, create an internship, or seek student involvement, please describe relevant details thoroughly (wages, responsibilities, duration of job, extent of involvement, how you will solicit/ market these opportunities etc.).

Response:

The Indigeponics: Community Food Resiliency Project was developed to increase student engagement opportunities centered on hydroponic growing systems at the UArizona by current PSM and MS students. We believe this structure will encourage students to participate knowing their peers are providing a unique learning opportunity without any social

stressors. Overall, our main goal is to provide positive, fun, and engaging CEA educational offerings that will demonstrate the importance of building inclusive and inviting environments at UArizona. The workshops will be marketed through various UArizona channels including the Indigenous Resilience Center, the Native American Student Association, NASA, the Agnese N. Haury Foundation, and UArizona AISES chapter, and the Campus Sustainability Fund one week prior to the workshop dates. The CEA curriculum and other content will be shared widely to increase access to these resources year around. In regards to student leadership, the Indigeponics project was founded by Indige-FEWSS Trainees Chantel Harrison and Jaymus Lee to increase indigenous students' and organizations' engagement at the CEAC. Ms. Harrison's responsibilities include establishing goals and objectives, managing project timelines, developing and overseeing budget processes, and allocating tasks. Mr. Lee is primarily responsible for developing the Indigeponics workbooks and co-lecturing at each workshop. Another Indige-FEWSS trainee, Calder Bethke, is providing support through co-leading the workshop lectures and providing technical support for the hydroponic systems demonstrations. The tasks and responsibilities of each graduate student result in varied weekly time commitments ranging from 2-5 hours. However, each graduate student is funded through other departmental or program sources which will not require any financial support from the CSF Mini-Grant. At this time, we do not anticipate hiring additional students or requesting student volunteers.

Education, Outreach, and Behavior Change:

What opportunities does this project provide for members of the campus/ community to learn about sustainability? How will your project educate the campus community and/or incorporate outreach and behavior change? How are you reaching beyond the "sustainability choir?" Please provide a description of how you expect your project will communicate its impacts to the campus community. What is your plan for publicizing your project on campus? How visible and accessible will your project be to the general campus population?

Response:

The Indigeponics project is designed to engage indigenous campus community members at UArizona while incorporating cultural components that merge with sustainability efforts at-large. The aim is to offer educational opportunities that demonstrate how changes in food production or home gardening at an individual level can be further implemented on a large scale utilizing hydroponic systems and CEA. Additionally, we aim to demonstrate how utilizing hydroponic systems can decrease water usage, maximize growing space, and increase food production in shorter periods of time through infographics, demonstrational videos, workbooks, and workshops. Our framework and offerings differ from a general approach to educating the campus community about sustainability, which we believe will be more effective in increasing inclusion and knowledge sharing in regard to local sustainability efforts. We intend to share our work via the Indigeponics website and social media platforms, primarily Instagram and possibly YouTube, and with our respective partnership with the Indigenous Resilience Center. We also intend to strategically share information with UArizona organizations, including NASA, UArizona AISES, and WGRC, and UArizona departments to share general information and promote the workshops to effectively maximize our reach. Additionally, the Indigeponics website will be accessible to the UArizona campus and the general public until the end of the reporting period. The impacts of the Indigeponics: Community Food Resiliency Project will include participation at each workshop, knowledge gained via survey, and the number of demonstrational and/or training videos offered. Other impacts may include social media metrics, such as impressions, reach, and engagement.

Timeline:

Please describe the timeline of your project. The timeline may be estimations at the point of this Preliminary Application but providing this is especially important if your project is a time-sensitive event. Funds may not be used as reimbursement for projects already completed, therefore a realistic amount of lead time should be given in order for proposals to be eligible for review. Please describe when your project will take place, key dates for when certain elements must start or be completed by, or any other known dates. Timeline extensions will be granted on a case-by-case and limited basis.

Response:

The primary activities of the Indigeponics: Community Food Resiliency Project will take place between March and April 2023. The tentative hydroponic UArizona community workshop dates are Friday, March 31st Friday, April 7th or 21st. Two weeks prior to each workshop, the Indigeponics teams will purchase the hydroponic supplies, print the CEA workbooks, and finalize food and beverage offerings. One week prior to the workshop, an informational flyer will be developed and distributed through multiple UArizona channels. We anticipate a basic website to be live one week prior to the first workshop and will continue to be accessible during the grant period. As the Indigeponics Research Project progresses, we anticipate sharing updates and providing new educational content on a biweekly basis. If leftover funds remain after the

final workshop, we may provide an additional activity based on interests and previous participation. Otherwise, the final report will be completed during the months of May and June. The report will be submitted prior to June 30, 2023.