



OFFICE OF SUSTAINABILITY

**CAMPUS
SUSTAINABILITY FUND**

Expanding Sustainable Mushroom Cultivation

Grant Type

Mini Grant

Application Type

Final Application

Project Manager 1 Name

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Ecology & Evolutionary Biology

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Project Manager 2 Role

Back-up

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Environmental Science

Requested Funding Amount

Only enter this number after completing the budget sheet, as the budget template will round up your request. Mini Grants may request \$500 up to \$10,000.

Year 1:

\$1700

Project Name

Expanding Sustainable Mushroom Cultivation

Primary Project Category

Natural Environment

Secondary Project Category

Waste

Background and Context

Please provide relevant background information about your organization/team, including your mission and/or expertise. Lay out the rationale for the proposed project, focusing on the issue that your project would address. You may also share how the project is new or how it complements, builds upon, or scales existing initiatives. 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 plan and specifics.

Response:

MycoCats is a student-led organization at the University of Arizona dedicated to fostering hands-on experience in mycology through mushroom cultivation and education. Our club is a place for students to engage in foraging and cultivation, while also offering a community to explore topics in mycology, including medicinal mushrooms, urban sustainability, and bioremediation. Building on the success of our 2024-2025 Campus Sustainability Fund project "Invasive to Edible: Sustainable Mushroom Cultivation on Buffelgrass," this proposal seeks to expand our research and impact. Last

year, we demonstrated the feasibility of converting buffelgrass, one of Arizona's most destructive invasive species, into a viable substrate for mushroom cultivation. This year, our goal is to broaden our study to include other local invasive plants, such as fountain grass (*Pennisetum setaceum*) and stinknet (*Oncosiphon piluliferum*). We also plan to explore the possibility of switching out current cultivation bag materials to an eco-friendly option in order to further improve sustainability during the process. Our expanded project will assess which invasive species are best suited for cultivation and the feasibility of utilizing sustainable cultivation materials in the future of our club. As before, all edible mushrooms produced will be donated to the UA Campus Pantry, continuing our dual mission of supporting environmental restoration and combating student food insecurity.

Project Description

Please provide a thorough description and explanation of your project. Be explicit in what your team is proposing. What will your project's outcomes be and how will you achieve them? Outcomes should be specific, measurable, achievable, realistic, and timely.

Response:

Our 2025-2026 project will expand upon last year's work by conducting controlled cultivation trials that compare three invasive plant species buffelgrass, fountain grass, and stinknet as potential substrates for mushroom growth. That previous mini grant allowed the MycoCats club to successfully demonstrate that buffelgrass, one of Arizona's most destructive invasive species, could serve as a viable substrate for mushroom cultivation. Through multiple small-scale trials at the Controlled Environment Agriculture Center (CEAC), volunteers from our club produced edible oyster mushrooms that were safely donated to the UA Campus Pantry. The 2024-2025 project also provided valuable lessons that guide this proposal. We learned that buffelgrass has a dense structure that slows fungal colonization compared to the standard substrate the club typically uses for cultivation.

Building on lessons from last year, we've adjusted our schedule to streamline invasive grass collection and strengthen coordination with community partners. MycoCats will now attend Sonoran Desert Weedwackers buffelgrass pulls every Saturday until sufficient material is collected. We are registered through their volunteer website and in contact with project coordinator Ellie Schertz for guidance on collecting invasive plant material as substrate. Since Weedwackers focus mainly on buffelgrass, we've also connected with the Saguaro National Park Weed-Free Trails Program to collect fountain grass and stinknet during additional volunteer events. After each event, grasses will be bagged and transported to CEAC for sterilization and cultivation. This process will allow us to identify the most viable invasive plant substrate for mushroom growth and donate the resulting harvests to the UA Campus Pantry, linking ecological restoration with campus food security.

We have two main project outcomes. The first is cultivating mushrooms using three invasive plant substrates, buffelgrass, fountain grass, and stinknet, to determine which species best supports fungal growth. To measure this, we will conduct multiple controlled cultivation trials for each substrate, monitoring growth rates, yield, and overall mushroom health. This will be made possible using available resources such as sterilization equipment and inoculation materials. We aim to complete the initial set of trials within three months, allowing time to analyze results and make adjustments as needed.

Our second project outcome is contributing to the Campus Pantry by donating all successful mushroom harvests to help alleviate food insecurity. To measure this, we will record and report the quantity of mushrooms donated during each harvest cycle. With successful cultivations, each cycle will contribute fresh produce directly to the campus pantry. The first donation cycle is expected to begin after the initial 1-month growth trial.

Timeline

Please provide a timeline breakdown for the key steps in your project. The timeline can be basic, but please include anticipated timeframes for each major step, including any key dates for when certain elements must start or be completed. The timeline can be in list format.

Response:

Our timeline was developed using data and observations from our 2024-2025 Campus Sustainability Fund project. During that project, we found that mushroom colonization and fruiting on buffelgrass substrates took approximately 4 to 6 weeks longer than initially expected, primarily due to the grass's dense fiber composition and the time needed for proper sterilization. This realization informed this year's schedule, which includes longer buffer periods between inoculation, growth, and harvest phases, as well as extra time for substrate adjustments and environmental fluctuations due to utilizing a humidifier in our grow tent for this project.

December : Project Planning and Preparation

Establish a collection schedule and partnerships (Sonoran Desert Weedwackers, etc)

Gather all necessary materials (invasive species pullings, equipment, spawn)

Set up a controlled growing environment at the CEAC laboratory

Mid January: Inoculation Phase I (Buffelgrass Trial)

Inoculate

Monitor and maintain optimal growing conditions

Collect data on growth and yield

Late January: Inoculation Phase II (Fountain Grass and Stinknet Trials)

Begin comparative trials, record growth rate, colonization, and yield data

Observe how the mushrooms are growing on the Buffelgrass substrate to determine if any changes need to be made.

Mid-Late February: Harvest and Analysis

Complete the first trial harvest of mushrooms

Analyze data from the trial and assess the viability of these invasive plants as a substrate.

Donate mushrooms to the campus pantry

Early March: Second Growth Trial

Inoculate and complete the second trial harvest

Continue monitoring

Donate mushrooms to the campus pantry

Early April-May: Final Analysis and Report

Compile a final report summarizing project outcomes, data, and future recommendations

Evaluate the potential for scaling or replicating the project.

Budget Narrative

Use this section to provide supplemental justification for the items you are requesting on your budget sheet. Please break down your justifications into the budget categories: Personnel or operating budget. Do not list out each expense or repeat notes made in the budget template, but instead address why the line items are being requested and the purpose they will serve, providing elaboration when necessary.

If you are requesting funding for personnel, use this section to elaborate on the position you are creating and how the budget and timeline was established for it. If you plan to hire students, describe in what capacity. Describe relevant details thoroughly (wages, responsibilities, duration of job, extent of involvement, how you will solicit/ market these opportunities etc.).

Ensure the descriptions match the line items in the budget sheet.

If matching or supporting funds are secured for the project, identify the source and amount in this section, and detail the impact of the matching funds on your overall budget.

Response:

The grant money will be used to purchase materials essential for mushroom cultivation and the expansion of our comparative invasive substrate trials. Funding will support the acquisition of different species of oyster mushroom grain spawn to test which varieties are best suited for growing on the three invasive substrates, buffelgrass, fountain grass, and stinknet. Oyster mushrooms are the primary focus due to their resilience, rapid growth, and proven adaptability in diverse cultivation conditions. Additional supplies such as Petri dishes, whole oats, and filter paper patches will be used to maintain and propagate cultures, allowing for continued cultivation trials using the same strains. To assist in harvesting and distribution, we will also purchase a small kitchen scale for measuring yields and compostable produce containers to package mushrooms for donation to the UA Campus Pantry. Dr. Orbach also recommended that we purchase a humidifier to aid with cultivation success on dry substrates, so we will also be requesting funding for that. These resources will enable us to carry out precise, replicable trials while ensuring that our project's results directly benefit the campus community.

We do not request personnel funding. All work will be completed by student volunteers within MycoCats. Matching support will be provided in the form of lab access and sterilization equipment from Dr. Orbach's lab and greenhouse space from the Controlled Environment Agriculture Center.

Project Feasibility and Logistics

The Campus Sustainability Fund will only fund projects that have completed the necessary work to ensure they can succeed, be completed in the grant's timeline, or have an accurate budget.

Please provide a description of the work that has been completed so far to make this project feasible. Please provide a description of the work that has been completed so far to make this project feasible. If relevant partners have been contacted/coordinated with, please identify them in your response.

For example, have you received consent or authorization to complete your project (such as from Housing and Residence Life, Facilities Management, Parking and Transportation, etc.)? If you are making modifications to campus, do you have written authorization or official quotes from Facilities Management to accurately identify the cost of labor and supplies?

Response:

Our team has already established the infrastructure necessary to ensure the project's success. MycoCats has secured continued access to space within the CEAC student greenhouses for cultivation, as well as laboratory equipment (autoclave, flow hood) through our faculty advisor, Dr. Orbach.

The Sonoran Desert Weedwackers are a volunteer conservation group under Pima County Conservation Lands and Resources. This group is composed of trained volunteers and county staff who coordinate monthly community weed-pulling events. Their mission is to remove invasive plant species, particularly buffelgrass, from Tucson to protect native biodiversity. Members of the MycoCats club will participate in one of these events every Saturday until we have enough invasive grasses for our project. All plant material will be gathered under the supervision of Weedwacker coordinators to ensure ethical and safe collection. We also plan on attending events with Saguaro National Park's Weed Free Trails Program in order to collect more Fountain Grass and Stinknet if necessary for the project.

To prevent accidental spread of invasive seeds, all collected material is autoclaved at high temperature before inoculation. After harvesting the mushrooms, the used substrates will be re-sterilized and composted safely at the CEAC composting facility. Sterilization and disposal are carried out by the Vice President of Cultivation of the MycoCats club, following laboratory biosafety protocols under supervision of Bree Gomez at the CEAC facility.

In the 2024-2025 project, MycoCats successfully cultivated oyster mushrooms on buffelgrass substrate and donated 5.64 pounds of fresh mushrooms to the UA Campus Pantry throughout the course of the project. The cultivation trials demonstrated a 0.51 substrate-to-mushroom yield ratio so each pound of processed buffelgrass substrate produced roughly half a pound of mushroom. During Spring 2025, the previous Vice President of Cultivation and two trained volunteers from MycoCats were responsible for harvesting, packaging, and delivering mushrooms to the Campus Pantry. Campus Pantry staff confirmed that these donations were integrated into their food distribution system and offered to students. For this upcoming project, we plan to continue this same donation model, adding improved record keeping to track the total weight and frequency of mushroom contributions. Our prior experience with buffelgrass cultivation trials gives us a strong foundation in both technique and logistics, making this expansion feasible within the grant period.

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 Guides and Tips page.

Response:

Our project will promote environmental sustainability through invasive species management, waste reduction, and sustainable food production. The project focuses on utilizing buffelgrass, fountain grass, and stinknet, which all are invasive species that pose a significant threat to the local Tucson ecosystem. By attending weed pullings at least once a week, we will be helping manage these invasive species and prevent it from further damaging native biodiversity. Instead of allowing these

invasive species to proliferate and degrade natural habitats, we will turn them into a substrate for growing mushrooms, a more ecological approach. Simultaneously, this project promotes sustainable food production by cultivating mushrooms on an otherwise discarded material. Furthermore, the evaluation of eco-friendly mushroom cultivation materials will be incredibly beneficial for our club and for the realm of mycological research/cultivation as a whole. An attached file showcases successful mushrooms harvested and packaging utilized for donation from our club project last year.

Social Sustainability Outcomes

Please provide a description of how you expect your project to advance social sustainability on campus. A definition of social sustainability is provided on our Guides and Tips page.

Response:

Our project will build upon our previous sustainability grant project and advance social sustainability on campus by addressing food insecurity through donating mushrooms cultivated from invasive substrates to the UA Campus Pantry, offering nutrient-rich, locally grown produce to students in need. As mentioned previously, the 2024-2025 project was able to donate more than 5 pounds of fresh mushrooms to the UA Campus Pantry. We plan to reach this number in donations and to succeed this number due to differences in trial design for this upcoming project. We also plan on including educational materials with our donations to Campus Pantry that will explain how the mushrooms were sustainably grown from invasive species and how this practice supports both ecological restoration and food justice. This will help make an educational impact on students outside of the MycoCats club and therefore increase social awareness about sustainability and invasive species. We will also continue to strive to create a collaborative environment for students in the Mycology club to be involved in community focused initiatives, such cultivation workshops utilizing materials from the grant and invasive species weed pulls. Every semester, MycoCats hosts a cultivation workshop during club time, which introduces members to basic cultivation skills. During the Fall 2025 semester we plan on hosting one in late November that will introduce new members to how we will be cultivating mushrooms for this project. This will allow us to recruit more volunteers for the upcoming Spring 2026 semester when we start our cultivation trials. These efforts will promote environmental justice and community involvement by linking ecological restoration efforts (invasive removals) with tangible social benefits. Students who participate will gain hands-on experience in sustainability science and mycological cultivation.

Student Leadership & Involvement

Please provide a description of how your project will benefit students on campus regarding the creation of leadership opportunities or student engagement. What leadership opportunities exist within your proposal? If you plan to seek student involvement, include relevant details thoroughly and how you will solicit/ market these opportunities.

Response:

Our project will benefit students on campus by making mushrooms easily accessible. All students within MycoCats will be able to get involved by volunteering their time to invasive weed pulls with Sonoran Desert Weedwackers. Students in MycoCats will be able to learn first-hand, from the Vice President of Cultivation, how to cultivate mushrooms to keep the project ongoing and pass down the information within the club for years to come. We plan to actively market these opportunities to club members and outside our organization, ensuring the project is accessible to all students. We will promote the project and the club through MycoCats' social media pages and university listservs. Our project will encourage students to participate actively in sustainability efforts on campus and off campus. The project offers diverse leadership opportunities for students in MycoCats. Cultivation Leads (2) will oversee substrate preparation and growth monitoring. Research Leads (1-2) will collect and analyze data on growth metrics and material strength. Outreach Leads (1-2) will organize educational demonstrations and social media communication. We hope to have around 4-5 students in leadership positions helping with this project and around 5-10 volunteers. We plan to transfer leadership to new members in late Spring 2026, when we host executive positions that will be opening up for the club for the next year. While the new executives do not need to continue with another project after this one, we will train them on cultivation practices and possible sustainability projects for the future. We will recruit volunteers through MycoCats meetings, UA sustainability listservs, and social media platforms. To expand the project's impact beyond MycoCats, we will establish communication with other student and departmental organizations, including the Sustainability Alliance, Epsilon Eta Environmental Fraternity, and the Controlled Environment Agriculture Student Association. We will set up collaborations where MycoCats would give a presentation at one of these other student club meetings. These collaborations will allow us to increase awareness around volunteer events and cultivation workshops. These opportunities will allow students from various disciplines to collaborate on real-world sustainability solutions.

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, particularly those who are not currently engaged with sustainability or environmental work? Please provide a description of how you expect your project will communicate its impacts to the campus community.

Response:

This project provides hands-on learning for the UA community about sustainability, invasive species management, and fungi-based innovation. We will host educational demonstrations and workshops during MycoCats meetings, showcasing how to cultivate mushrooms on different types of substrate, such as on invasive species. Results will be shared through social media, UA Sustainability newsletters, and the College of Agriculture, Life and Environmental Sciences. To ensure the project's long-term impact, MycoCats will develop a "Sustainable Cultivation Toolkit" based on our research results. This will be a digital resource that will include step by step substrate preparation guides, yield data comparisons between invasive species, and recommendations for eco-friendly cultivation materials. We plan to share this with both our MycoCats club members but also the UA Office of

Sustainability and other student environmental clubs. Through these workshops, project results, and cultivation toolkit, the project will not only raise awareness but also build a framework for continued learning. This will allow future student members to carry forward the MycoCats project mission of utilizing invasive species for cultivation.