*Please submit this completed application, the supplemental budget spreadsheet, and any relevant supporting documentation by the deadline indicated in your Step 1 notification letter to* [*Sustainability-Committee@Illinois.edu*](mailto:Sustainability-Committee@Illinois.edu)*.The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the SSC Program Advisor, Micah Kenfield, at* [*kenfield@illinois.edu*](mailto:kenfield@illinois.edu)

# General Information

**Project Name:** Sustainable Agricultural Food System – Juice Processing

**Total Amount Requested from SSC:** $300,000

**Project Topic Area(s):** Energy Education Food & Waste

Land Water Transportation

# Contact Information

### Project Lead

Applicant Name: Brian Jacobson

Unit/Department: Food Science & Human Nutrition (FSHN)

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### Financial Contact *(Must be Full-time University of Illinois Staff Member)*

Contact Name: Janice Trudell

Unit/Department: Food Science & Human Nutrition (FSHN)

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### Facilities Management Contact *(If Applicable)*

Contact Name: Brian Jacobson

Email Address: bjacobs3@illinois.edu

**Primary Project Team**

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Email** |
| Bruce Branham | Crop Sciences | Email Address |
| Youngsoo Lee | FSHN | Email Address |
| Name | Department/Organization | Email Address |
| Name | Department/Organization | Email Address |

# Project Description

**Please provide a brief background of the project, the goals, and the desired outcomes:**

This project is a significant expansion of the current local food partnership existing between the Student Sustainable Farm (SSF), Multifunctional Woody Perennial Polyculture (MWP), FSHN Pilot Processing Plant (PPP), and UIUC Dining. Presently we grow, process, and serve on campus a variety of tomato sauces (pizza sauce is served across campus) and hot sauce. Soon, we will add a whole wheat flour milling line. We have a very successful and growing program to provide quality, sustainable, and local food products and education to the UIUC students.

This particular project will focus on the addition of a fresh juice processing line that will be able to handle a wide array of fruits and vegetables, packaged into an array of containers from single serving to bulk. As with the other projects, this partnership has no funding for large capital equipment expenditures, and we rely on grants to increase our capacity. Dining Services is a strong partner in our project and has agreed to provide a grant to help with the purchase of items needed to produce fresh juice products.

The MWP site is a new 30 acre, long-term experiment established in 2015 to study perennial, multi-cropping systems. Over 7000 currant plants were established in 2015 with fruit production expected to begin in 2017. We expect that harvest yields will approach 20,000 lbs as the plants mature (2019-2020). Additionally, the SSF has a variety of produce that would be suitable for processing into juice products. The equipment specified will be flexible enough to handle all of these varieties, including produce that may not be eye-appealing enough for typical consumers in a fresh produce market, eliminating waste. The currants are very high in anthocyanin, have high anti-oxidant contents (currants have twice the anti-oxidant levels of blueberries), are excellent sources of vitamin A & C, and are rich in many essential vitamins and minerals. Fresh fruit and vegetables from the SSF have similar benefits, and all of these products can be blended into desirable flavors. The finished juice products will be great tasting, highly nutritious, and a fantastic product to be made locally for our student body.

One of the bigger issues with juice is it typically has to travel thousands of miles between farm and end consumer, making it anything but fresh. Juice from this product will travel less than 5 miles round trip from farm to consumer, greatly increasing nutritional value, and reducing carbon emissions from transportation. Processing the fresh fruits and vegetables is necessary to ensure a safe and legal product, and we have selected a method that meets all FDA requirements while maintaining the highest nutritional content possible.

Several pieces of equipment will be utilized from previous SSC grants, or existing FSHN PPP equipment, minimizing costs. All new equipment will be purchased to be as flexible as possible to allow for expansion into many varieties of inputs and finished products. As a quick example, we will utilize the wash conveyor, hot break tank, steam kettles, and several pumps and piping from the tomato processing project, and the bottling line we propose to purchase for juice in this project will also allow us to individually package the sauce products we are already making. Ensuring our equipment is flexible is what will allow us to continue to expand into other products as efficiently as possible.

**How will the project improve the sustainability of the Illinois campus and how will the project go above and beyond campus standards?**

This project will increase the percentage of local, healthy foods that will be served to students on campus, while providing an educational experience to those involved in processing or eating the product. iCAP has established a goal that 30% of all food served on campus be locally (within 100 miles) grown and/or processed. This project will be both locally grown and processed, all within a 5 mile radius of the Dining Hall where it will be served. To my knowledge, no peer institution has a program like this.

**Where will the project be located? Will special permissions be required to enact the project on this site? If so, please explain and submit any relevant letters of support with the application.**

The equipment for the project will be located and utilized in the FSHN Pilot Plant in the Agricultural Engineering Sciences Building. This space is managed by Brian Jacobson, so no special permission is required. Many pieces of beneficial equipment, and a support infrastructure already in place will be beneficial to the success of this project.  
  
This lab currently houses the tomato processing, hot sauce, and flour milling project, and has just completed a $3M renovation.

**Other than the project team, who will have a stake in the project? Please list other individuals, groups, or departments affiliated directly or indirectly by the project. This includes any entity providing funding (immediate, future, ongoing, matching, in-kind, etc.) and any entities that will be benefitting from this project. Please attach letters of commitment or support at the end of the application.**

The 3 stakeholders in this project are the Department of FSHN, Department of Crop Sciences, and UIUC Dining Services. Each entity has an active member(s) on the team, and has worked together on many other projects, including several funded by the SSC (tomato, flour, and hot sauce processing).

In addition, UIUC Dining Services is providing $50,000 towards this particular project.

**Please indicate how this project will involve or impact students. What role will students play in the project?**

Students will be involved at all levels of the project. The bulk of the incoming produce will be grown on the MWP farm with smaller quantities generated at the SSF, both of these projects have heavy student involvement and leadership. The Pilot Plant utilizes student interns for all production work, and will feature this (and previous SSC projects) in the processing courses it holds. Students in a FSHN product development course help develop the recipes, and finally, UIUC Dining hires student workers, and will serve these products to the student body through daily meals and special events.

This project will also be featured in farm tours, open houses, ExplorACES, high school tours, incoming student recruitment & orientation, and more.

This is truly a project for the students, by the students.

# Financial Information

*In addition to the below questions, please submit the supplemental budget spreadsheet available on the Student Sustainability Committee website. Submission of both documents by the submission deadline is required for consideration of your project.*

**Have you applied for funding from SSC before? If so, for what project?**

Yes, the “Sustainable Agricultural Food System – Tomato Processing” project. This project has been very successful, and is ongoing. Last year, we provided ~25% of pizza sauce served in the Dining Halls, with a goal of reaching 100% in 2017, along with expanding to other tomato based products. The equipment also allowed us to participate in several successful Guinness World Record attempts, and many other test trials involving other Sustainable Student Farm produce.

The SSC has also funded the “Sustainable Agricultural Food System – Grain Milling” and “Sustainable Agricultural Food System – Hot Sauce” projects which are ongoing and will be producing project this Summer.

**If this project is implemented, will there be any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs?   
  
Please note that SSC provides funding on a case by case basis annually and should not be considered as an ongoing source of funding.**

All ongoing funding will be provided by UIUC Dining Services and FSHN. Dining pays a fee for the processing time on the equipment, and this money is used to pay for student internships and equipment maintenance.

**Please include any other sources of funding that have been obtained or applied for. Please attach any relevant letters of support as needed in a separate document.**

N/A

# Environmental, Economic, and Awareness Impacts

*In addition to the below questions, please indicate specific measurable impacts as applicable on the supplemental budget spreadsheet.*

**Which aspects of sustainability does your project address, and how? Does the project fit within any of the iCAP goals? If so, how does the project go beyond the university status quo standards and policies.**

The project most specifically addresses the procurement and waste section of the iCAP goals, directly assisting campus in its goal of procuring >30% of its food served on campus from local sources. This has indirect effects of reducing carbon emissions from trucking goods to campus, and also educating students who are eating this product at point of consumption through Dining local food labeling, and events/tours held in the FSHN Pilot Plant. As I mentioned above, I am not aware of any other peer institution who has a program such as this in place.

**How will the environmental impacts of your project be measured in the near and long term? What specific monitoring and evaluation processes will you be using to track outcomes and progress?**

We will track the amount of produce processed into juice for Dining Services, and then calculate a percentage purchased locally vs. their traditional vendors. Additional products that we make using this equipment will be tracked as well.

**What is the plan for publicizing the project on campus? In addition to SSC, where will information about this project be reported?**

This project will be publicized in three main ways.

The greatest impact will be had by the marketing program Dining Services will put in place at point of consumption. Locally grown and processed food is specifically called out in all Dining Halls where it is served, and every student who passes through will be exposed. As we continue to grow the number of products processed on campus, we hope to expand this “at consumption” marketing, as well as publicize the program outside of campus, and at peer institutions.

The second method of publication will be through marketing materials and outreach provided through existing campus channels. Organizations such as iSEE, Extension, and the Crop Science and FSHN departments publish stories, host events, and create marketing materials both on and off campus. These collaborations have been very successful in publicizing the existing Tomato Sauce project, and we expect the addition of another project will simply add to the critical mass. Some examples include prime positioning in the College of ACES Alumni Magazine, Department of FSHN Annual Publication, and an iSEE Youtube video.

The final method will touch the smallest group of people, but will hopefully leave the most profound impact. As the project is student run (with staff guidance), the ongoing internships provided to these students will provide an immersive experience not likely to found elsewhere. From planting and harvesting to safely processing and consuming, the students will see the entire method of creating locally processed grain. Our hope is they will take that experience and use it to make sustainable choices within their future careers.

**What are your specific, measurable outreach goals? How will these be measured?**

We do not have any specific plans in place to survey students on their awareness or knowledge of the project, but do expect to ensure proper marketing is displayed at point of consumption at Dining Services, and that several wide-market publications are produced. Additionally, we will be able to gauge some measure of success by tracking the students who had internships with this project, and where their future employment leads them. Our hope is down a sustainable path.

**Do you have any additional comments or relevant information to aid in evaluation of this application?**

This project will continue to extend the capabilities of the local food production and processing effort that has been moving forward on campus. This project will also help to educate students on the values of locally produced food including better nutrition and better taste and flavor.

The total budget for the project is $350,000, and a $50,000 match is being provided by UIUC Dining, bringing the total SSC request to $300,000.

As requested, I have split these into two phases that could be funded over 2 semesters. My proposed split is shown on the budget sheet. $95,000 for phase one allows us to bring in equipment to do the initial juicing for test batches and small production to UIUC Dining Services. Phase two ($205,000) allows for proper pasteurization and safe bottling/storage of larger quantities of product as we move past the recipe development and testing.

Both phases are necessary to have a successful project, but the nature of how the production will scale allows us to separate the cost over 2 semesters. If beneficial to SSC, it is possible to move the Pasteurization step ($100,000) from phase 2 to phase 1. We can operate either way, so I will leave the option to SSC whether they would like phase 1 or phase 2 to have the higher cost.