Applicant Information:
DATE: 10/16/2020
STUDENT'S NAME: Jonah Helmer
CORNELL I.D. #: 4907281
EMAIL ADDRESS: jdh355@cornell.edu
ADDRESS FOR GRANT CHECK DELIVERY: 644 Rosemont Ringoes Rd, Stockton, NJ 08559
CLASS YEAR AND MAJOR: Plant Sciences 2022
WHO WILL BE PROVIDING YOUR LETTER OF SUPPORT? Dr. Michael B. Timmons and Dr. Neil Mattson

Project Description: Please answer each question. Be SPECIFIC and as descriptive as possible. Use as many pages as needed to thoroughly address each question. If you provide a budget, please provide justification for your numbers.

1. What is the proposed use of the funds requested?

I have partnered with the Ithaca Science Center to build an educational and interactive aquaponics system to increase my hands-on experience and knowledge of high-tech farming systems, address local food insecurity, and provide an alternative to unsustainable industrial agriculture at a local level. Aquaponics combines recirculating aquaculture systems (RAS) with hydroponics, to reduce chemical fertilizers and recycle fish waste to grow plants and fish more sustainably. The proposed funding would be allocated accordingly to purchase the Aquaponic Source Harmony Aquaponic System and a lighting kit. Depending on funding, the project is planned to take place during Winter Break 2020/2021.

2. How will this activity enhance the quality of your academic career? Will, there be additional benefits to AZ and/or CALS?

This Science Center collaboration will not only provide me with valuable hands-on experience of setting up and maintaining a Controlled Environment Agriculture (CEA) system, but also engages folks of all ages to learn about aquaponics and other sustainable high-tech growing systems. I have a passion for sustainable CEA and have taken courses and worked as a research assistant in the Timmons/Mattson Cornell Controlled Environment Agriculture Lab to further my career in this industry. However, I have not yet had the opportunity to build and operate my own aquaponic system. I hope to gain important job skills and incite high-tech agriculture systems through the experiential learning component of the proposed project.

This project seeks to motivate students by exposing them to sustainable aquaponics in a collaborative and informative aquaponics build, increasing interest and applied education in STEM fields and sustainable agriculture. According to a study done by Daphna Shohamy, a neuroscientist at Columbia University, teenagers are extremely impressionable and better

learners than young adults due to their still-developing brains.[1] Exposure to constructing, maintaining, and learning about a zero-waste aquaponic system will encourage students to explore careers in sustainable and digital agriculture, technologies that are emphasized as part of CALS curriculum. Likewise, through the process of caring for the aquaponics system, members of the community will learn the importance of caring for an ecosystem and environment through feeding the fish, harvesting fresh produce, and donating food to neighbors in need. By increasing community access to education and hands-on skills in sustainable CEA, the Ithaca Science Center aquaponics system will promote CALS' mission to connect the life, agricultural, environmental, and social sciences to develop solutions that increase understanding and improve life, inspiring more students to apply to CALS to learn about these revolutionary technologies.

Already, the proposed aquaponics project has facilitated a partnership with Arron Chang, a Lansing High School Student, who shares my passion for sustainable agriculture and will be applying to CALS early decision this fall to pursue a degree in Agriculture Sciences.

The completion of the Ithaca Science Center aquaponics system will be publicized on the Alpha Zeta Fraternity (AZ), Cornell Chapter, website to demonstrate member involvement in the community and promotion of education for the advancement of agriculture. Involvement with building, maintaining, or visiting the aquaponic system at the Ithaca Science Center, will give AZ members a better understanding of environmental principles and hands-on experience with cutting edge technologies in sustainable agriculture. AZ members strive to participate in charitable activities and often go above and beyond our philanthropy requirements. AZ members will have the opportunity to deliver healthy fish and produce from the aquaponic system to local food security groups such as the Friendship Donation Network. The aquaponic system will also give AZ members the opportunity to donate their time to educate visitors about sustainable high-tech agriculture. This will benefit many AZ members who pursue studies in agriculture education, by expanding their experience with hands-on learning techniques.

3. How much financial support do you need from the CALS Charitable Trust?

At least $3000 to cover the cost of materials for the project build.

4. What is the total cost of the project/trip/purpose?

For our collaborative project, we are requesting $3000, $2500 for the Aquaponic Source Harmony Aquaponic System build kit and $500 for a lighting kit.

Budget

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[1] Davidow JY, Foerde K, Galván A, Shohamy D. An Upside to Reward Sensitivity: The Hippocampus Supports Enhanced Reinforcement Learning in Adolescence. Neuron. 2016 Oct 5;92(1):93-99. doi: 10.1016/j.neuron.2016.08.031. PMID: 27710793.

Aquaponic Source Harmony System	$2459.00
(https://www.theaquaponicsource.com/shop/complete-systems/home-scale-systems/harmony/)	
Aquaponic Source Economy Lighting kit	$475.00
Shipping	$450.00
Total:	**$3420.00**

5. Do you have additional sources of funds for this project? If so, what are the other sources of funds?

The Ithaca Science Center agreed to provide $500 in funding if $3000 comes from grants.

6. **A letter of support from my academic advisor, research advisor, or other faculty member associated with this activity will be sent separately by e-mail.**

☐ I attest that if my request is approved, funds will be used only for the purpose described. The project costs and contributions listed above are accurate, and that I am not requesting reimbursement for these expenses from any other sources. I agree to provide within 30 days of completion of the approved activity, an accounting of how the funds were actually used, a brief description of the activity or project results and how those results have or will impact my academic pursuits in CALS. I give permission to the CALS Charitable Trust to use, for promotional and reporting purposes, any portion of or all of my summary description of the experience.

Requester Name: Jonah Helmer Date: October 16, 2020