INLAND HIGHER ED SUSTAINABILITY COUNCIL NEWSLETTER

HIGHLIGHTED EVENTS

BY THE TITLE V TEAM

Read about the Sustainability Speakers Series and how you can get involved!

NEW MAJORS AT LA SIERRA UNIVERSITY

BY THE TITLE V TEAM

Did you know there are three sustainability-related academic majors available at La Sierra University?

A MESSAGE FROM THE DIRECTOR OF OUTREACH, SUSTAINABILITY STUDIES PROGRAM

Welcome to the inaugural edition of our newsletter, a cornerstone in our collective journey towards a sustainable future led by the Inland Higher Ed Sustainability Council.

As the Director of Outreach for the Sustainability Studies Program at La Sierra University, Riverside, California, it's my pleasure to share the story of our council's genesis and its mission. Inspired by the vision of the City of Riverside's Innovation Team Lead, Brando Crozier, and co-founded with UC Riverside's Sustainability Officer Fortino Morales III, the council was established one year ago as a beacon of unity for Riverside and the Inland Empire's educational institutions. Our mission is clear: to forge a sustainable future that engraves a lasting positive imprint on our region.

Our council thrives on collaboration and resource sharing, which is vital for establishing a foundation of solid sustainability initiatives across our community. We are creating a robust network dedicated to environmental stewardship, educational growth, and community well-being by connecting various institutions and associations.

In this pursuit, we have engaged students in a pivotal role, tasking them with creating this newsletter. It is designed to share information on local and global sustainability efforts, carrying insights and developments crucial to our community and beyond. With each edition, we intend to highlight the concerted efforts of our partners, celebrate achievements, and outline a path forward.

As we unveil this first edition, we sincerely thank you for your support and engagement. Your commitment to a sustainable planet fuels our collective journey, ensuring that our endeavors leave an indelible mark on the Inland Empire and nurture a legacy of environmental responsibility.

Thank you for joining us on this journey. Together, we step into a promising future with knowledge, unity, and the shared goal of creating a sustainable world for future generations.

Best,

Tabetha Johnson,MA
Director of Outreach
Sustainability Studies Program
La Sierra University

Sustainability Speaker Series

-Dr. Joni Adamson, President's Professor of Environmental Humanities at Arizona State University

The Sustainability Speaker Series, offered through a fledgling Sustainability Studies Program and by the office of La Sierra University Provost April Summitt, held its first lecture on Monday, April 8, at the Troesh Conference Center in the Zapara School of Business. The inaugural presentation featured Joni Adamson, a preeminent scholar and in-demand international speaker who holds the position of President's Professor of Environmental Humanities at Arizona State University and is its director of the Environmental Humanities Initiative.

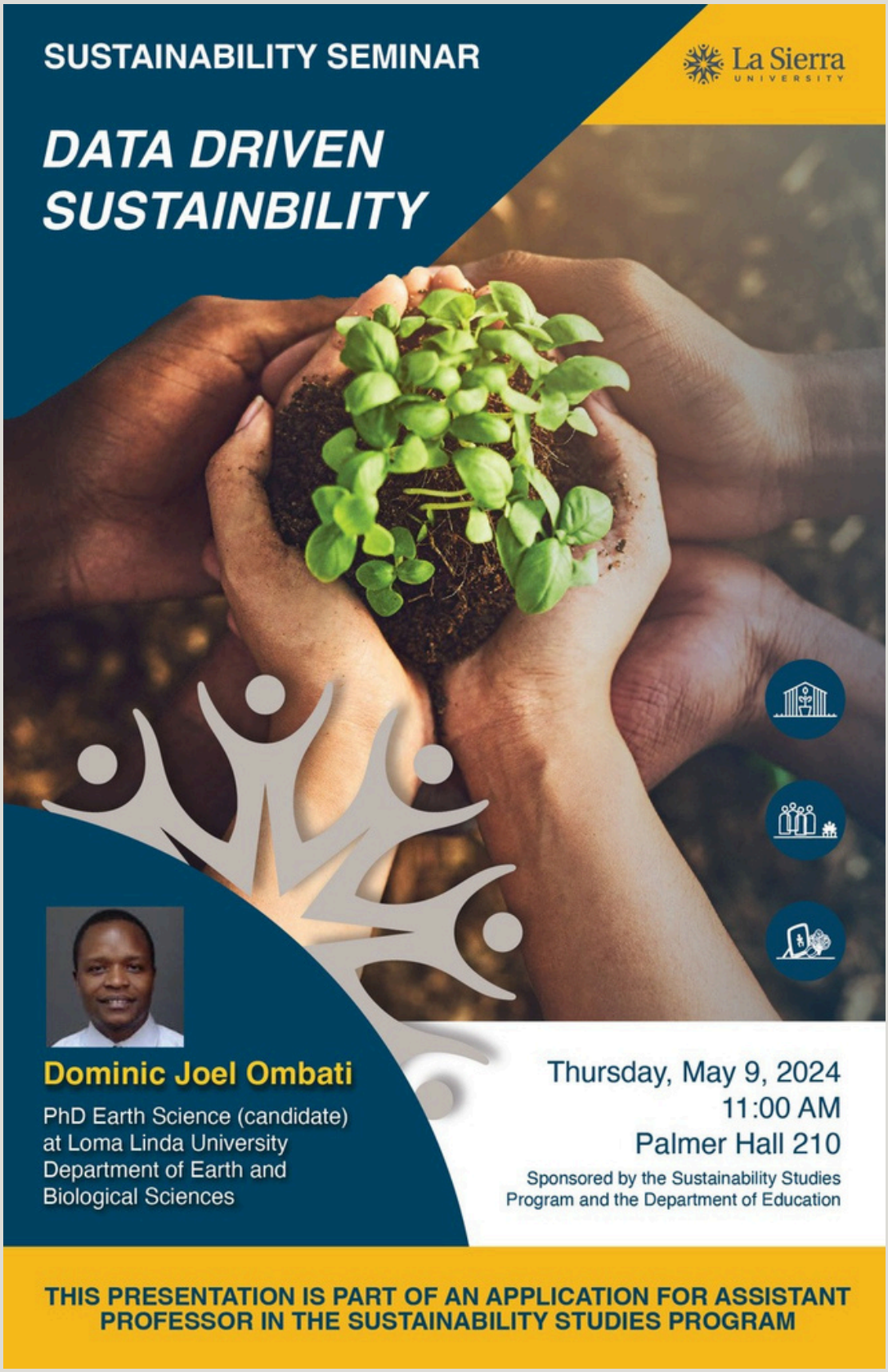
Adamson gave a talk titled "Why the Humanities, Creativity, & Imagination Will Be Key to Achieving Sustainability Goals for 2050." She discussed how students from all disciplines, including those in STEM, art, business, and the humanities, can apply their talents and expertise to contribute to the sustainability field.

A reception was held at 5 p.m. before the lecture, which began at 6 p.m.

"I hope Dr. Adamson's lecture will begin a valuable conversation in our community about the human relationship with the environment and that we don't have to all be scientists to fill this role," Summitt said. "Those who study humanities will be vital in helping us care for our planet. We want to hold this speaker series to begin community-wide conversations about this important topic."

Darla Martin Tucker
Director - Public Relations at
La Sierra University

Upcoming Events May 2024: DataDriven Sustainability



CEA for Nursery Workshop

Citrus Clonal Protection Program ... starting citrus correctly

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

For More Information
labtofarm.org

WORKSHOP

Controlled Environment Agriculture (CEA) for for Plant Nursery Production

Join us for the "CEA for Nursery" workshop—a dynamic day dedicated to enhancing nursery production across various crops, with a special focus on citrus, using the latest in Controlled Environment Agriculture (CEA). Designed for growers, nurseries, researchers, and students, this event combines expert insights and hands-on experiences to foster growth, learning, and networking. While the workshop will cover multiple crops, the overarching emphasis will be on citrus, exploring cutting-edge CEA technologies and advancements specific to this vital sector. Don't miss this unique opportunity to delve into the future of nursery production!

To **register** and for **more information on the program**, please visit our website **https://www.labtofarm.org/indoor-ag**.

WEDNESDAY
MAY 22, 2024

START AT
08:00 AM - 17:00 PM

UCR BARBARA & ARTS CULVER
3834 MAIN STREET, RIVERSIDE, CA 92501

UCR CCPP
4650 14TH ST, RIVERSIDE, CA 92501

Still looking for a summer lab experience???

Introducing New Majors at La Sierra!

BA in Sustainability and Society

Students will encounter a study of social and natural sciences to develop critical thinking for resolving sustainability-related challenges on local and global levels. Th e program focuses on social, cultural, political, and community development aspects of sustainable systems

BS in Urban Plant Agriculture

Students will focus on basic science and cultivated food production systems. They will learn to devise thoughtful, dynamic, and realistic solutions for society's environmental challenges with minimal adverse outcomes.

BS in Sustainable Agricultural Entrepreneruship

Students will focus on issues of sustainability in agriculture and the economy. They will learn about the importance of resources, policy, and management. The pathway will provide students with practical experiences to prepare them for management careers in farming and food production with a focus on sustainable practices in agriculture at a local and global scale..

Did you know?

Sea otters are a significant species to the environment. They are a keystone species, which means that without them, their ecosystem would have a considerable effect (Trust, 2023). Otters are essential because they eat sea urchins that eat kelp. Kelp is vital to the ocean ecosystem because it is where many fish species are born (Christensen et al., 2023).

Otters used to live on the coasts from Russia through Alaska to California (Trust, 2023). Due to poaching, they practically went extinct in the early 1900s (Grandoni & Mara, 2023). Today, it is rare to see them in the wild along the coasts of California and Oregon, only preserved in places like the Monterey Bay Aquarium (Grandoni & Mara, 2023).

Another natural predator of sea urchins is sea stars (starfish). Many sea stars have been dying due to sea star wasting syndrome (Pope, 2022). Sea star wasting syndrome describes many symptoms that sea stars may have that cause them to have lesions, tissue decay, and fragmenting of limbs (Miner et al.). There is no known cure for sea star wasting syndrome yet.

Without otters and starfish in the wild, the amount of kelp in the ocean is decreasing due to an abundance of purple sea urchins (Pope, 2022). The solution is more complex than releasing otters into the wild or harvesting mass amounts of sea urchins. Sea otters have been successfully put back in the wild in Alaska and British Columbia; however, when they were done in Oregon, they all died. People usually eat red sea urchins, so there is no reason for sea urchin divers to collect purple sea urchins if they do not make money off of them (Bland, 2017).

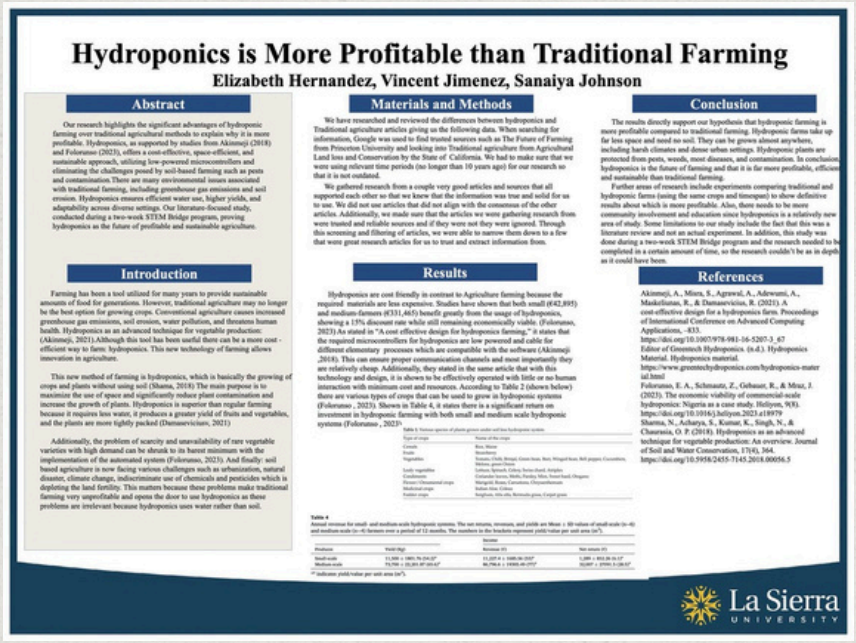
You can help reintroduce sea otters into the Pacific Northwest and California by getting involved with organizations like the Otter Project. You can donate, sponsor an otter, or volunteer with them (California Coastkeeper Alliance)! A way to help the sea creatures that rely on kelp forests is to eat more purple sea urchins (Pope, 2022). If you eat sushi, opt for purple sea urchins rather than red or green urchins if there is an option. Consumers' more significant demand for purple sea urchins can entice sea urchin divers to collect more purple sea urchins. You can make a difference by making small changes and influencing those around you.

-Annika Samayoa, Freshmen Student

(Bibliography on last page)

STEM Bridge Recap

STEM Bridge students Ruth and Monique working in a Skills Lab



Hydroponics is More Profitable than Traditional Farming

Elizabeth Hernandez, Vincent Jimenez, Sanaiya Johnson

Abstract

Our research highlights the significant advantages of hydroponic farming over traditional agricultural methods to explain why it is more profitable. Hydroponics, as supported by studies from Akinmeji (2018) and Folorunso (2023), offers a cost-effective, space-efficient, and sustainable approach, utilizing low-powered microcontrollers and eliminating the challenges posed by soil-based farming such as pests and contamination.There are many environmental issues associated with traditional farming, including greenhouse gas emissions and soil erosion. Hydroponics ensures efficient water use, higher yields, and adaptability across diverse settings. Our literature-focused study, conducted during a two-week STEM Bridge program, proving hydroponics as the future of profitable and sustainable agriculture.

Introduction

Farming has been a tool utilized for many years to provide sustainable amounts of food for generations. However, traditional agriculture may no longer be the best option for growing crops. Conventional agriculture causes increased greenhouse gas emissions, soil erosion, water pollution, and threatens human health. Hydroponics as an advanced technique for vegetable production: (Akinmeji, 2021).Although this tool has been useful there can be a more cost - efficient way to farm: hydroponics. This new technology of farming allows innovation in agriculture.

This new method of farming is hydroponics, which is basically the growing of crops and plants without using soil (Shama, 2018) The main purpose is to maximize the use of space and significantly reduce plant contamination and increase the growth of plants. Hydroponics is superior than regular farming because it requires less water, it produces a greater yield of fruits and vegetables, and the plants are more tightly packed (Dumasevicius, 2021)

Additionally, the problem of scarcity and unavailability of rare vegetable varieties with high demand can be shrunk to its barest minimum with the implementation of the automated system (Folorunso, 2023).And finally: soil based agriculture is now facing various challenges such as urbanization, natural disaster, climate change, indiscriminate use of chemicals and pesticides which is depleting the land fertility. This matters because these problems make traditional farming very unprofitable and opens the door to use hydroponics as these problems are irrelevant because hydroponics uses water rather than soil.

Materials and Methods

We have researched and reviewed the differences between hydroponics and Traditional agriculture articles giving us the following data. When searching for information, Google was used to find trusted sources such as The Future of Farming from Princeton University and looking into Traditional agriculture from Agricultural Land loss and Conservation by the State of California. We had to make sure that we were using relevant time periods (no longer than 10 years ago) for our research so that it is not outdated.

We gathered research from a couple very good articles and sources that all supported each other so that we knew that the information was true and solid for us to use. We did not use articles that did not align with the consensus of the other articles. Additionally, we made sure that the articles we were gathering research from were trusted and reliable sources and if they were not they were ignored. Through this screening and filtering of articles, we were able to narrow them down to a few that were great research articles for us to trust and extract information from.

Results

Hydroponics are cost friendly in contrast to Agriculture farming because the required materials are less expensive. Studies have shown that both small (€42,895) and medium-farmers (€331,465) benefit greatly from the usage of hydroponics, showing a 15% discount rate while still remaining economically viable. (Folorunso, 2023) As stated in "A cost effective design for hydroponics farming," it states that the required microcontrollers for hydroponics are low powered and cable for different elementary processes which are compatible with the software (Akinmeji ,2018). This can ensure proper communication channels and most importantly they are relatively cheap. Additionally, they stated in the same article that with this technology and design, it is shown to be effectively operated with little or no human interaction with minimum cost and resources. According to Table 2 (shown below) there are various types of crops that can be used to grow in hydroponic systems (Folorunso , 2023). Shown in Table 4, it states there is a significant return on investment in hydroponic farming with both small and medium scale hydroponic systems (Folorunso , 2023).

Conclusion

The results directly support our hypothesis that hydroponic farming is more profitable compared to traditional farming. Hydroponic farms take up far less space and need no soil. They can be grown almost anywhere, including harsh climates and dense urban settings. Hydroponic plants are protected from pests, weeds, most diseases, and contamination. In conclusion, hydroponics is the future of farming and that it is far more profitable, efficient and sustainable than traditional farming.

Further areas of research include experiments comparing traditional and hydroponic farms (using the same crops and timespan) to show definitive results about which is more profitable. Also, there needs to be more community involvement and education since hydroponics is a relatively new area of study. Some limitations to our study include the fact that this was a literature review and not an actual experiment. In addition, this study was done during a two-week STEM Bridge program and the research needed to be completed in a certain amount of time, so the research couldn't be as in depth as it could have been.

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La Sierra University

Elizabeth Hernandez, Vincent Jimenez, Sanaiya Johnson
STEM Bridge Project in Sustainability

STEM Bridge is an excellent opportunity for incoming freshman and transfer students to indulge in early access to research opportunities at a University level. During the two week program, participants get to meet various chairs of the departments, make connections with peers, and learn how to create a scientific poster presentation. In this program we created a presentation based on sustainable agriculture, focusing on comparing hydroponics and traditional agriculture and seeing which option was more cost-efficient. Our research highlights the significant advantages of hydroponic farming over conventional agricultural methods to explain why it is more profitable.

Elizabeth Hernandez
STEM Bridge Student
2023 Cohort

THANK YOU FOR YOUR SUPPORT!

Children's hands holding a plant

A note from the editor:

I am so grateful for the opportunity to create this newsletter and help spread awareness about sustainability through our community. As a freshman here at La Sierra University, I have always been interested in sustainability, and working with a team of people who share this interest is fantastic. As a resilient student, I am adamant about improving myself and others. Working on ourselves daily, whether physical, emotional, or mental, we all should strive to be better individuals. This is similar to sustainability, which is the betterment of our environment. Improving how we live and interact with our environment allows us to coincide peacefully with nature. Be intentional about how you live your life sustainably for your betterment!

Thank you all for your interest and engagement in this newsletter. We recognize your support and sense of community as we continue to educate our campus on a healthy and sustainable way of life. If you enjoyed this newsletter, we encourage you to share it with your friends.

Let us know if you have any questions, comments, or feedback. We would love to hear from you about any topics, facts, or questions we may be able to answer in future editions. You can contact us by email at guidedpathways@lasierra.edu or by requesting to be on this newsletter's email list.

Dylan Fox,
La Sierra University Sustainable Studies
Student Editor

-Dylan Fox, Your Editor

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THE INLAND SUSTAINABILITY COUNCIL

Brando Crozier : Team Lead - Mayor's Bloomberg Innovation Team (City of Riverside / Riverside Public Utilities)

Tonya Huff : Faculty Chair, RCC Sustainability Committee, District Sustainability Committee Representative, Faculty Co-Advisor RCC StudentSustainability Collective (Riverside City College)

Tabetha Johnson : Director of Outreach, Sustainability Studies Program (La Sierra University)

Francis Mitalo : Sustainability Program Specialist (UC Riverside)

Fortino Morales : Sustainability Officer (UC Riverside)

Nick Reksten: Chair, University of Redlands Sustainability Council (Faculty in Economics) (University of Redlands)

Yash Patel : Associate Director of Energy, Sustainability & Saftey Administration (San Bernardino Community College District)

Erin Sanborn : Director of Sustainable Education, Office of Community Service Learning (University of Redlands)

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