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The Value of Community Gardens in Georgetown County

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Introduction

Georgetown RISE is a United Nations Regional Centre of Expertise[1] on Education for Sustainable Development (coastal.edu). Their mission is to assess the sustainability needs of local businesses and communities in South Carolina and apply strategies to further adapt the Sustainable Development Goals (SDG's)[2]. A program that runs through Georgetown RISE is the UN Youth Corps Paid Internships. Spring semester of 2023, I was awarded with the opportunity to intern alongside a fellow Coastal Carolina Student Brie Mack-Bingham at the Environmental Services of Georgetown County. The Environmental Services internship provided me with an abundance of opportunities including teaching at their environmental education center, leading bald eagle tours at our landfill, managing a community garden and conducting a litter index in Georgetown. Managing a community garden sounded like my best option when considering what path best suits my strengths. Community gardens are bountiful with benefits such as positively impacting the community residents and economy, reducing transportation of food, encouraging the local ecology, and giving community members a place to form relationships. An increase of community gardens can assist in the fulfillment of SDG's 2 (Zero Hunger), 3 Good Health and Well-Being, 4 (Quality Education), and 12 (Responsible Consumption and Production). by providing community members with the fundamentals of starting their own garden and the benefits of a healthy food system in their county. All human beings merit some form of green space in this rapidly urbanizing world and this report will provide empirical evidence in order to give community members the data they need to prompt their own county council officials to construct local green space.

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[1] A collection of organizations in a particular region that are committed to the principles of the United Nations Sustainable Development Goals (utdallas.edu)

[2] blueprint for peace and prosperity for people and the planet now and into the future (wikipedia.org)

Project Relation to SDG's

The first SDG I will cover is SDG 12.3 (By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses). 1/10 people worldwide are suffering from hunger. Meanwhile 30.3% of the world's total food production is being lost every day at the production and consumer level (sdgs.un.org). Logistically humans produce enough food to nourish over 10 billion people. Why this food is not being distributed evenly around the world comes with complex answers that are oversimplified at times. One reason this food is not reaching hungry people is because ⅓ of the worldwide edible crop production is used to feed our livestock. The ratio of the amount of food we feed our livestock compared to the amount of food we get out of our livestock is extremely inefficient and wasteful in calories and proteins. "Many of the "extra" global calories are redistributed away from those who need it most to be used as livestock feed to produce animal-sourced foods for those who can afford it most" (Global Hunger, 2022). Our food system priorities are defective and need to be modified so that our priorities are feeding those who need it, not those who want it.

During my time as an Intern at the Environmental Services Office of Georgetown County I have been reviving and maintaining their vermi-compost shed and community garden. A vermicompost setup is a great micro level sustainability change that can be constructed for a minimum of $30 at the comfortability of your home. Vermi-composting is the process of using earthworms known as red wiggler worms to consume certain food waste converting it into organic fertilizer known as worm castings. Vermicompost is a great way to reduce your food waste by feeding food scraps to your worms. Food waste accounts for 24% of all municipal solid waste (fda.gov). It is the most abundant material to find in landfills outnumbering papers,

plastics and metals. It may seem that this food waste may not be an issue because it will decompose faster than most other materials, but this is not true. Yes, food does decompose exceptionally faster than all other materials found in a landfill, but food waste along with wood and paper generate the third largest human related methane emissions. Methane is a powerful greenhouse gas that traps 80 times more heat than carbon dioxide, making methane a major contributing factor to global warming (npr.org). Food waste accounts for 8% of global greenhouse gas emissions (fao.org). When used correctly red wiggler worms can fight off these harmful gases. Red wiggler worms can reduce the amount of methane released from food decomposition by 32%. This process is done through their gut stabilization of substrates and increased aeration from constant turning on substrates (encyclopedia.pub).

The public access vermicompost shed located at the environmental services of Georgetown Country was put in place to sustain the community garden but also to give community members the knowledge they need to start their own vermicompost setup at home. Establishing a personal vermicompost habitat is very easy to kick off and maintain throughout the year. Insert Picture of vermicompost setup here. I am currently collecting food scraps from 7 of my colleagues at Coastal Carolina University and we have managed to save about 16 pounds of food waste. By March 2024 I hope we can triple this food scrap waste composted by 3x. This target can be achieved by taking advantage of our compost bins located around the community garden and starting more vermicompost habitats around the site. Collecting large scale food waste from Georgetown residents is viable because we are conveniently located near a landfill.

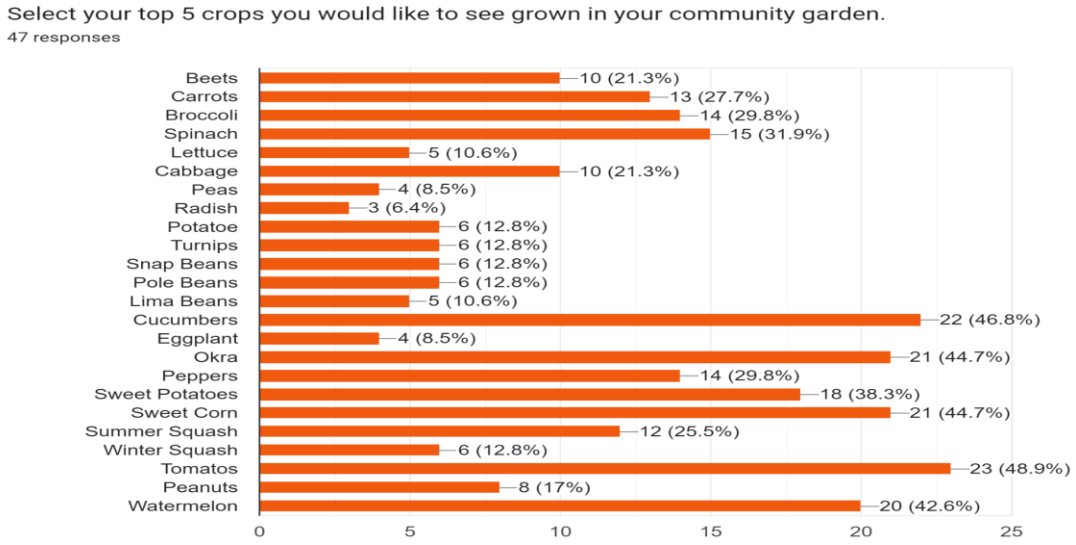
Another notable benefit of a vermicompost setup is the natural production of crop fertilizer. Food waste reduction greatly benefits the environment, but what the worms produce greatly benefits the harvester. Worm casting is simply worming discharge. Worm castings are

super charged with minerals such as phosphorus, magnesium, potassium, and calcium. Worm casting is also inhabited by thousands of different species of bacteria, fungi, protozoa and other microbes giving life to your soil encouraging your plants to yield the most crops. Using worm castings will decrease the amount of fertilizer you will need by anchoring plant nutrients that would normally leach away with water. Reducing the amount of fertilizers in your garden can help achieve Target 12.4 (By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment). Over time, fertilizers can lead to soil degradation, nitrogen leaching, soil compaction and soil carbon. Fertilizers also kill off bacterial and microbial populations.

Along with our vermicomposting, our public community gardens assist in achieving Target 12.3. Our current food distribution system is a large reason that 30.3% of the world's daily food production is being wasted or lost. Fruits and vegetables are not capable of being transported thousands of miles away after being harvested. Mass farming, immoderate food purchasing, long distance transportation, processing and meticulous consumers are other factors that play into our immense amount of food waste. Food wasted at the consumer level contributes to over half of the total food waste. Before kickstarting the community garden, a survey was posted on the Environmental Services of Georgetown County Facebook page February 10th, 2023.

The main objective of this survey was to find out what crops the community would want to see grown in their community garden.

This is important in reducing food waste because the foods that were most popular (sweet corn, cucumbers, tomatoes) as seen in the Figure below are most abundant for the high demand.



The crops we want to plant minimal amounts are the ones that received the fewest votes. Growing an abundance of peas would be wasteful because the community does not want them therefore, they will go to waste.

The vermicompost and community garden are symbiotic. There is always the chance that our plants can be invaded by pests or just go bad due to overproduction or lack of interest. Tossing these scraps in the trash is wasteful and harmful to the environment. Instead after the removal of our spoiled produce we place it in the vermicompost bin and let the worm feast! Every few months worms will produce their casting which will then be used to fertilize the soil maximizing our plants' potential yield.

Of the 48 respondents, 80.4% stated that they were unaware of their local community garden located at the Environmental Services Office of Georgetown County. This survey was posted on the Environmental Services of Georgetown County Facebook page to ensure that only

locals to Georgetown County were contributing. This survey is the top performing post on the Environmental Services Facebook page with 2,185 impressions. Knowing that 80.4% of respondents were unaware of the community garden, educating the community about the free resources that are provided by the County was going to be a top priority. As a starting point I decided that I would add our Community Garden as a business profile on google. Now with a simple google search of "Community Gardens in Georgetown County" the Browns Ferry Community Garden will be the first to pop up. This link provides directions, hours of operation, a phone number and a general description. In less than 2 months this business profile reached 129 people and 27 people were interested enough to request directions to the community garden from their location. Although this was a great step towards exposing the County residents to our community garden, Georgetown County is a large county and I wanted to make sure that residents far from our location did not have to drive far in order to participate in a community garden. In order to accommodate and educate all Georgetown County residents about their local green space I created an ArcGIS online map that shows the locations of all known community gardens in the Georgetown County area.

Another initiative I took to further educate Georgetown County residents about the public community garden is our "Browns Ferry Spring Planting Day". This was the first event that has ever taken place at the Browns Ferry community garden. Advertising for this event was a top priority and we managed to get our flier reposted by multiple different Facebook accounts including "Georgetown County S.C" who has 21,000 followers. Attending community events over the weekend is extremely hard for the busy lifestyles of Georgetown County residents, therefore providing incentives was also key to getting people to show up to our event. Walmart, Starbucks and Krispy Kreme were all excited to sponsor our event when they heard about all the

positive benefits it could provide to their community members. The benefits of our event include increased social capital, therapeutic benefits, and promotion of environmental education[3]. Studies done by _____ show that environmental education has an effective impact toward improving the environmental knowledge, attitudes, intention and behaviors of young people, essentially developing young people to become more environmentally engaged and aware (Wetering et al., 2022, p.11). With all these benefits I wanted to see if Environmental Education was well received by the residents of Georgetown County. During our Spring Planting Day, a two-part survey was conducted among the participants. The results of question 3 "What is your preferred learning style: Environmental Education or Classic School Learning" resulted in 90% of the 21 subjects' preferred learning styles being environmental education over classic school learning.

In a survey launched by Southern Cross University 77% of 900 surveyed across America and Australia want to further their education on how to live a sustainable lifestyle. I wanted to see how this information translated in Georgetown County. In the same survey conducted at the Spring Planting Day, one question asked, "Are you interested in living a sustainable lifestyle?" The responses indicated that 95.2% of those surveyed are interested in living a more sustainable lifestyle. These results were very promising for Georgetown County but also biased somewhat because the survey was conducted at a community garden. Next time this survey is conducted I want to be located in a neutral location (ex. Grocery store, sporting event, community events).

Another effort to achieve target 4.7 is publishing a video on the process of building our own vermicompost setup. This video aims to simplify the process of creating a household

[3] Process that allows individuals to explore environmental issues, engage in problem solving and take action to improve the environment. Most effectively taught outdoors with a practical teaching style.

vermicompost habitat. Choosing to spread information on vermicompost through video format will cater to the visual learners.

The World Health Organization states, “Nature is our Greatest Source of Health and Well-Being” (WHO, 2023). Through educating the public as to where their local green space resources are located, we hope this will aid in achieving Target 3.4 (By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being). “A case-control study showed that 136 gardeners with a mean age of 55.8 years who engaged in allotment or community gardening reported higher levels of mood and self-esteem, and a reduced level of psychological distress as compared with 133 non-gardeners [82]. (Koay, Dillon). The results from this study are directly linked to the “fostering of good health and well-being by furthering resilience on three levels (individual, social, and natural environment)” (Armstrong). The quantitative effects of being out in nature are becoming so profound that doctors worldwide are starting to prescribe green prescriptions to combat our mental health crisis and cardiovascular disease. Community gardens can help combat cardiovascular disease (#1 cause of death in the U.S) through promoting healthy natural food and physical activity of maintaining a garden. Community gardens combat suicide deaths (#10 cause of death in the U.S) by giving people a sense of belonging and companionship while working with people in community gardens. Social capital is one of the major benefits of community gardening, and through the increased support and trust community members feel this has proven to reduce levels of anxiety and stress (Snel et al.,). In order to localize these global statistics, I provided a before and after survey during our Spring Planting Day. The results from the 15 participants indicated that 100% felt that their time in the garden positively affected their mental health.

Encouraging the construction of green space into your community is an important first step to improving local ecology, pollution mitigation, and social capital. My experience as an intern at the Environmental Services of Georgetown County has allowed me to assist in achieving Targets 3.4, 4.7, and 12.3. Overall, through all my projects this semester I was aiming to achieve Target 12.8- "By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature" (United Nations, 2023). Throughout this semester we have detected through multiple surveys that environmental education should be prioritized for our younger generation, so they effectively manage the changing climate and take advantage of their local resources. 92.9% of the community gardeners learned something new while at the Spring Planting Day event. In addition, spending time in nature has proven to be beneficial for mental and physical health globally and locally in Georgetown County.

Recommendations

Based on my research there is abundant proof for why green space in local communities is a vital component to healthy social capital and should be a human right. Social isolation, loneliness, and crime cases have decreased in areas where green space is more prominent. Aside from the obvious benefits of living near green space including higher fruit and vegetable consumption there are other medical benefits. Locally grown foods eliminate the process of mass farming leading to healthier well-rounded soils.

Due to my findings, my top recommendation for our local Georgetown Community Garden is to upkeep the maintenance of the community garden by local community members so that when there are no interns there to manage it the space can thrive. Improving the promotion

of a community planting day annually will get the word out to more community members and get people looking forward to the planting day. The goal is to get the community planting day known county wide therefore shared resources for advertising and tools and labor can be coordinated from town to town in Georgetown County. Implementing a perennial area would also be wise to encourage plant and wildlife activity all year round. Perennial plants will reduce soil erosion, enrich soil all year round, reduce fertilizer usage and save money. Updating the green space GIS map will be very important to tracking the progress in increasing the amount of community gardens in Georgetown. Expanding the community garden would be ideal if there is a positive community response. If the community garden is eventually expanded, organizing distribution of the crops to local business and food pantries, leading to an increased social capital. Education must be a priority when it comes to maintaining the community garden for generations to come. Social media outreach is vital to engaging the younger generation when it is their turn to take over the community garden. Videos and data driven social media posts are great ways to leave the next generation with the proper tools to maintain and upkeep local gardens. Having school classes visit the community garden for environmental education would be a great way to get the kids working and learning simultaneously.

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