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## Campus Food Forest

Abigail Spangler

Coastal Carolina University, [aespangle@coastal.edu](mailto:aespangle@coastal.edu)

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# **Campus Food Forest**

By

Abigail Spangler

Marine Science

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Louis E. Keiner  
Director of Honors  
HTC Honors College

Jennifer Mocos  
Assistant Professor  
Honors/Interdisciplinary Studies  
HTC Honors College

**ABSTRACT:**

This thesis develops a cohesive outline to carry out a food forest project on the campus of Coastal Carolina University. The project was created by drawing upon informational interviews with representatives from other universities that have implemented campus sustainable agriculture programs, coupled with a photography project, campus workshops, and a survey of the CCU community to gather data to support the future implementation of the food forest project on the CCU campus. A food forest is a 7-layer system of sustainable gardening that functions year-round and mimics the ecosystem and patterns found in nature.

**INTRODUCTION:**General aims:

The purpose of this study is to assess student, faculty, and staff interest in sustainable agriculture, to understand how the food forest would be most utilized by the campus, and to collect potential new ideas for the food forest project. A food forest is a type of sustainable farming which includes a system of stewards of the environment, economy, and society that ensures the environment is protected, food producers are treated with respect, quality foods are available, agro-economics and permaculture is practiced, and healthy, fresh foods are accessible to everyone. By bringing a plan for sustainable agriculture to campus in the form of a food forest, we are creating an educational space for the Coastal community to come together and improve the environment. As a marine science student with knowledge of sustainability but rather little knowledge of growing structures, literature is very helpful as a foundation for establishing a food forest.

Past Literature:

To understand the importance of a food forest we must understand our current industrialized agriculture. Due to the vast number of crops produced to meet demands, industrial farming has become very detrimental to the environment. Unfortunately, this type of agriculture uses large quantities of crops and livestock which are produced through industrial techniques for the purpose of sale. This type of agriculture relies heavily on a variety of chemicals and artificial enhancements, such as pesticides, fertilizers, and genetically modified organisms (Cunningham, 2013). This type of agriculture also uses a large amount of fossil fuels and large machines to manage the farm land. Whereas, sustainable agriculture is a type of agriculture that focuses on producing long-term crops and livestock while having minimal effects on the environment (Cunningham, 2013). This type of agriculture tries to find a good balance between the need for food production and the preservation of the environment. In addition to producing food, there are several overall goals associated with sustainable agriculture, including conserving water, reducing the use of fertilizers and pesticides, and promoting biodiversity in crops grown and the ecosystem (Cunningham, 2013). This is especially important with Coastal's proximity to rivers and the ocean for runoff. Due to the lack of chemical pesticides and fertilizers, people are not being exposed to or consuming synthetic materials. This limits the risk of people becoming ill from exposure to these chemicals. In addition, the crops produced through sustainable agriculture can also be more nutritious because the overall crops are healthier and more natural. One major benefit to the environment is that sustainable agriculture uses 30% less energy per unit of crop yield in comparison to industrialized agriculture (Cunningham, 2013). This reduced reliance on

fossil fuels results in the release of less chemicals and pollution into the environment. Plus, with CCU maintaining the food forest on campus, there will not be transportation costs. Sustainable agriculture also benefits the environment by maintaining soil quality, reducing soil degradation and erosion, and saving water. In addition to these benefits, sustainable agriculture also increases biodiversity of the area by providing a variety of organisms with healthy and natural environments to live in. A food forest is a great use of permaculture and sustainable agriculture. A food forest and garden both produce crops, however, a food forest exists on their own. There is no mowing, weeding, spraying, or tilling required. No pesticides, fertilizers, herbicides or nasty chemicals. Additionally, structure is vital to increase plant diversity thus increasing productivity and stability, with polycultures, not monocultures (Hawkins). By using the 7-layer system of orderliness rather than tidiness, and guilds of elements that work harmoniously together, will allow the food forest to maintain itself almost independently (Hawkins).

The first layer is the Canopy which consists of multifunctional fruit and nut trees (Figure 1). These include standard and semistandard apple and pear trees, European plums on large rootstock, and full-sized cherries. Nitrogen-fixing trees will help build soil, and most bear blossoms that attract insects (Dana 2019). These include black locust, mesquite, alder, and, in low-frost climates, acacia, algaroba, tagasaste, carob chestnut trees, Chinese chestnuts, and Walnut trees are excellent options, especially if they are pruned to be open to let the light through (Dana 2019). However, dense, spreading species like the classic shade trees such as maple, sycamore, and beech don't work well in the food forest because they cast shadows over a large area (Dana 2019). This layer of trees pulls carbon (CO<sub>2</sub>) and Nitrogen (N<sub>2</sub>) out of the air and helps build fertile soil while holding moisture for surrounding vegetation. When preparing to

plant you should select healthy 1-year-old trees, about 3 to 4 feet tall and with a good root system (Doubrava et al, 2016). A small tree with a good root system is more desirable than a large tree with a poor root system. Equally, you should not choose trees that are 2 years old or older that do not usually grow as well as 1-year-old trees (Doubrava et al, 2016). Frequently, older trees do not have sufficient buds on the lower portion of the trunk to develop a good framework (Doubrava et al, 2016). When it's time to plant the canopy layer it is important to soak the roots in water for 6 to 12 hours if they are not moist (Doubrava et al, 2016). The trees should then be planted if the soil is not too wet. When planting, dig holes large enough to receive roots freely without cramping or bending from their natural position. Before planting, cut off all broken or damaged roots with a sharp knife or pruning shears. Keep root pruning to a minimum. Set the plants at about the same depth they were planted at the nursery so that the uppermost root is not more than 1 to 2 inches underground (Doubrava et al, 2016). Specifically for the southern climate, Arkansas Black Apple and Yellow Delicious Apple trees were recommended (O'Flaherty, 2019).

The second layer is titled low tree layer which is composed of dwarf fruit trees (Figure 1). Here are many of the same fruits and nuts as in the canopy, but on dwarf and semi dwarf rootstocks to keep them low growing (Dana 2019). Also naturally small trees such as apricot, peach, nectarine, almond, medlar, persimmon, pawpaw and mulberry work well here (Dana 2019). For South Carolina specifically, peach trees are a very good option because they can handle the sun most or all of the day and can tolerate a large range of soil types (Doubrava et al, 2016). The early morning sun is particularly important because it dries the dew from trees, thereby reducing the incidence of diseases. Although peach trees will grow well in a wide range

of soil types, a deep soil ranging in texture from a sandy loam to a sandy clay loam is preferred which is common in Conway (Doubrava et al, 2016). In addition, the growing season works well with the coastal community being present during the spring semester. Peach trees should be planted while fully dormant from early December to mid March because root growth may occur during relatively mild winters (Doubrava et al, 2016). It is important to plant as early as possible so the roots will establish before spring growth begins. The various peach varieties ripen in the upstate of South Carolina from mid-June to mid-September (Doubrava et al, 2016). The most common varieties are: Fantasia, Flordaking, and Springcrest. Fantasia are large in size, have freestone fruit, yellow flesh, very high quality, and firm with excellent color. They are ripest near the end of July. Next, Flordaking produces large clingstone peaches, have a medium quality, and yellow flesh. They are ripest at the beginning of May. Similarly, Springcrest peaches which are small clingstone, medium quality, and a deep red blush and bright yellow undercolor (Doubrava et al, 2016). The South Carolina Garden (SCG) recommended Elberta Peach and Jefferson Peach's did well for our climate. Similarly, Andrew O'Flaherty recommended muscadine grape trees (O'Flaherty, 2019).

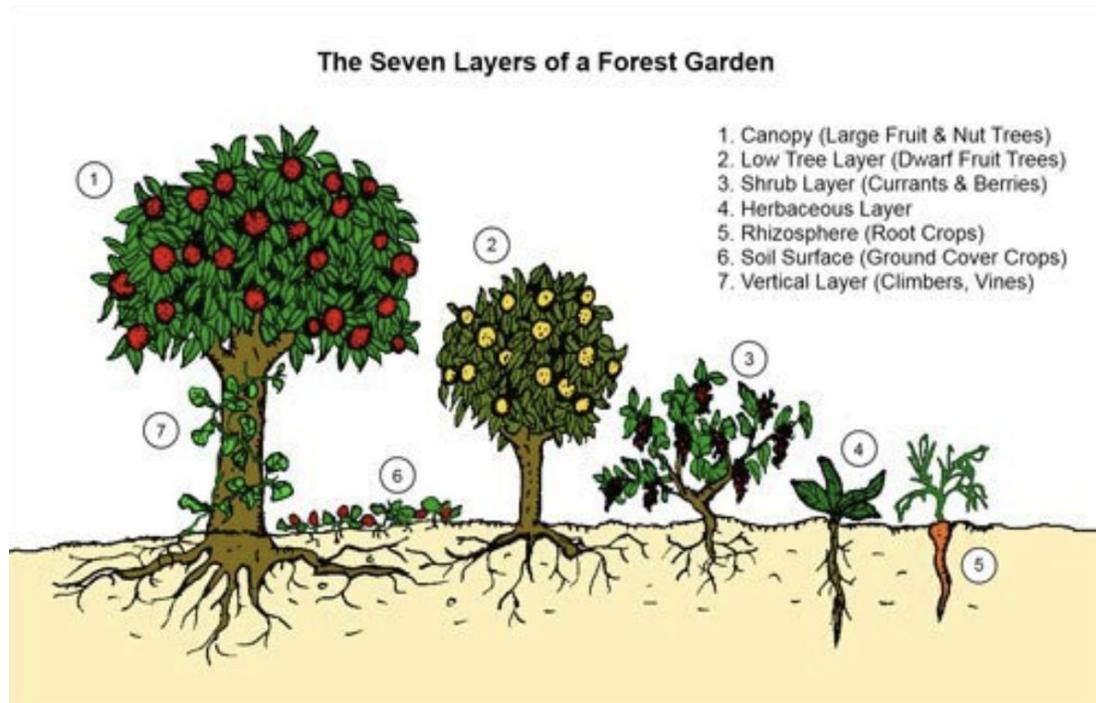
The third layer is the shrub layer and consists of a huge range of shrubs available. It is important to lean towards ones with beneficial qualities – attracting insects, birds, providing food, mulch, nitrogen etc (Figure 1)(Dana 2019). This tier includes rose, hazelnut, butterfly bush, bamboo, serviceberry, the nitrogen-fixing *Elaeagnus* species and Siberian pea shrub, lavender, and many others (Dana 2019). The SCG recommended blueberries, everbearing raspberries, and Arapaho thornless raspberries all grow well in South Carolina (O'Flaherty, 2019).

The fourth layer is the herbaceous layer, consisting of non-woody vegetation: vegetables, flowers, culinary herbs, and cover crops, as well as mulch producers and other soil-building plants work best (Figure 1)(Dana 2019)). For example: mint, garlic chives, perpetual/perennial spinach, and parsley.

The fifth layer is the rhizosphere (Figure 1). Most of the plants for the root layer should be shallow rooted, such as garlic and onions, or easy-to-dig types such as potatoes, ginger, horseradish and carrots, otherwise you disrupt the other plants roots too much (Dana 2019).

The sixth layer is the soil surface layer for surface plants to provide ground coverage (Figure 1). These are low, ground-hugging plants—preferably varieties that offer food or habitat— for instance strawberries, nasturtium, clover, creeping thyme, ajuga, and the many prostrate varieties of flowers such as phlox and sweet violets which also provide color (Dana 2019). These plants play a critical role in weed prevention, occupying ground that would otherwise succumb to invaders (Dana 2019).

The seventh and final layer is the vertical layer (Figure 1). These climbing plants will use the trees as their climbing frame. Here are food plants, such as cantaloupe, honeydew melon, passionflower, and vining berries (Dana 2019); and those for wildlife, such as honeysuckle and trumpet-flower (Dana 2019). These can include climbing annuals such as squash, cucumbers, and melons. Some of the perennial vines can be invasive so they should be used sparingly and with caution (Dana 2019).



**Figure 1.** The seven layers of a food forest system (Burnett, 2014)

## **METHODS:**

When it came time to choose where I wanted to focus my research for a thesis project, I knew I wanted to incorporate my background in science with a project to help campus become more environmentally friendly. Initially this idea was born as a campus community garden where I thought students, faculty and staff could come together. Group organizations and classes could volunteer to assist and maintain the garden. The garden would have benefitted local food pantries to help the surrounding communities. However, the idea blossomed into a more effective and beneficial project when it became a food forest. My thesis advisor and I discussed the idea of a garden and she liked my plan. She then put me in contact with Dr Dominique Cagalan, who is in charge of SPROUTS on campus and actively participated in environmental projects. I went to

her office and we discussed my idea. She proposed a current project she is working on and we discussed permaculture and sustainable agriculture. Unfamiliar with structure and plants in a food forest, I had to continue researching. Preliminary research was conducted to understand permaculture and other college institutions' implementation of a food forest and campus gardens. I then reached out to other institutions with similar projects for feedback on how they started their food forest and were able to maintain them using students. For example, I contacted the University of South Carolina. I reached out to Andrew O'Flaherty with the initial idea of a community garden being proposed for Coastal. He is the garden manager at the University of South Carolina's Sustainable Carolina Garden (SCG). I was looking at how other Universities in the south implemented and maintained gardens with student involvement. He provided a copy of their goals, business plan, potential vegetation for the southern climate, and maintenance strategies. Furthermore, I researched potential spaces for a food forest on google maps while considering certain parameters: space, sunlight, water, convenience, and growing seasons of vegetables in South Carolina. The more I investigated, the better suited I thought a food forest was for campus rather than a community garden. To be thorough, I also did research on how Coastal has already shifted campus to become more sustainable. Once some preliminary research was completed, Dr Mokos and I met to discuss a plan for implementing the food forest on campus.

### IRB Process

There were three main methods for collecting interest and feedback from the Coastal community in the form of a photo project, campus workshop, and survey. Before completing any

research on campus with participants, I had to become certified with the Institutional Review Board (IRB). Once I registered with the IRB, I had to conduct ethics training by watching a series of modules to get my certification. Subsequently, many forms were submitted to the IRB with my three data collection processes for approval to question students on campus.

### Photo Projects

I created the photo project to provide a visual representation of the interest for the food forest while collecting feedback for how the food forest can help the campus. The goal is to have 200-400 or more participants who will be current members of the campus community (students, faculty, or staff). People who are not currently students, faculty, or staff at the university will be excluded. The photo project data can be collected anywhere on campus, from Prince lawn to a classroom. Participants will be asked to sign a consent form and then be photographed holding a dry-erase board with their response to the question, "What does a food forest mean to you?" Then, photographs will be used to create a collage of images and the responses will be organized by like ideas. In order to create this project I had to submit a student Exempt Review Request form which I had to submit to IRB for review and to take photos of participants, I also had to complete a photography, video or audio recording authorization form.

### Campus Workshop:

Workshops will be hosted on campus and participants for the workshops can be any organization or individual on campus. I think it is important to target larger groups such as sororities, fraternities, or environmental clubs. If departments or teachers would allow, campus workshops can also be done during class to gauge a wide variety of students who may want to

participate or provide feedback. As the researcher, I would begin by explaining to the participants what a food forest is, how sustainable agriculture is better for us and the environment, and how Coastal would benefit from the addition. Then I would open the conversation to the group and record ideas. I would use some of the questions from the survey to start the conversation. Again a consent form and student Exempt Review form were filled out and submitted before the campus workshops could be conducted

### Survey

The survey will show who in the University has interest in this potential food forest project, how individuals think the food forest will impact their CCU career, and provide feedback or suggestions for the future project. The goal is to have 400 participants who will be current members of the campus community (students, faculty, or staff). People who are not currently students, faculty, or staff at the university will be excluded. When creating the survey, I had to draft and redraft questions multiple times to ensure everybody could answer the questions with little difficulty or confusion. The final draft of the food forest survey contained 8 questions. The first two questions (figure 2) ask if you're a current member and the primary relationship you have with the University in order to understand the target interest. Then question three (figure 2) asks the participants how they feel about bringing sustainable agriculture to campus. This was left as an open ended question in order to allow individuals to be personal and not box in any potential ideas. Question four (figure 2) asks the participants how they see themselves using the food forest. I chose this question to be multiple choice to provide some structured options in case people were not sure how to use a sustainable gardening location. Also, the structure of the question allows the future campus organization or department carrying out this

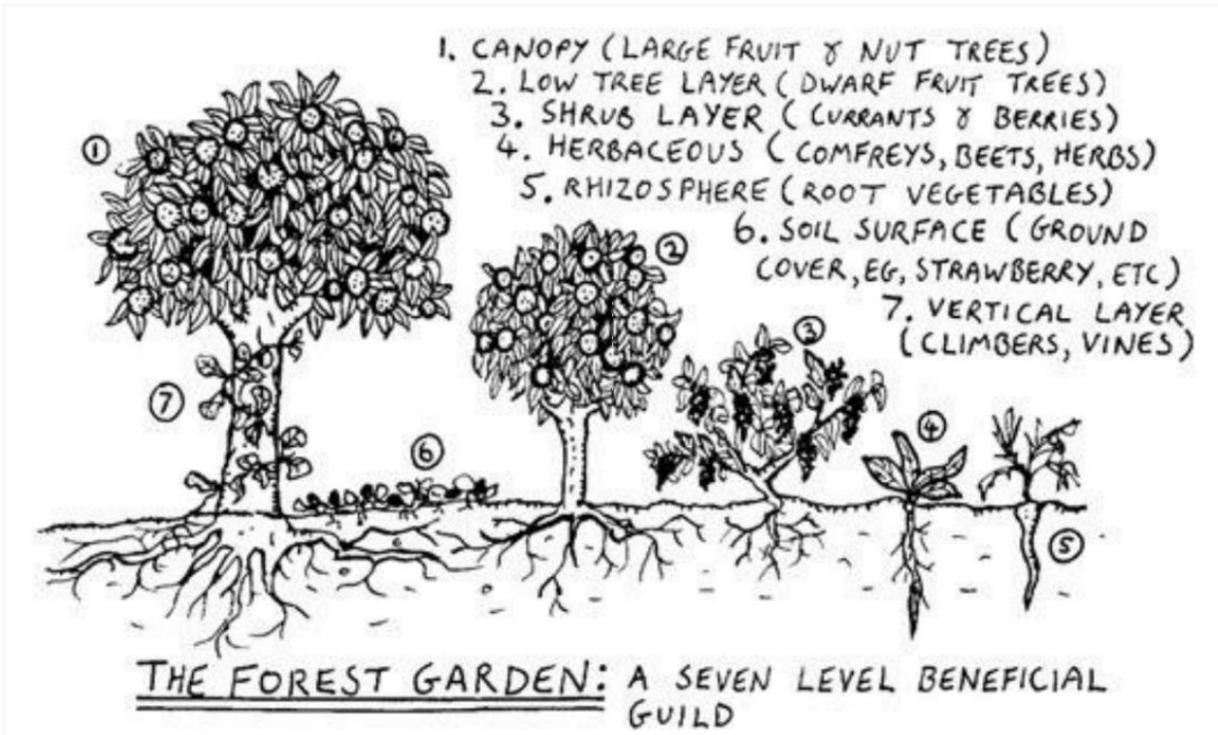
project to have a specific list of criteria the CCU community wants to see in their space. Next I asked students to provide how a food forest would affect their CCU experience (figure 2). I chose to leave this open ended because I'm asking how it affects you personally. Question six (figure 2) is included to gauge participation for maintenance. Many people can like an idea, but sometimes do not want to participate in the actual creation or maintenance aspects. Next, the last two questions are left open ended in order to give individuals the ability to leave comments, feedback, or future ideas. Community feedback is vital to the next planning steps of the actual project. I will recruit participants via email, social media, or in person through student organizations, classes, or in situ on campus. Recruitment will occur through purposive and snowball sampling. The researcher will begin by contacting people who they already know on campus. Besides contacting people they already know, the researcher will also recruit research participants through referrals, and through in situ recruitment in high-traffic areas of campus. Then survey responses will be tallied and open-ended questions will be qualitatively coded. In order to send out the survey I had to submit an Informed Consent form, recruitment script, and Student Exempt Review Request form to the Institutional Review Board (IRB) for approval.

#### Campus Presentation:

In order to share the preliminary research a presentation will be given to SPROUTS and opened to the CCU Community via zoom due to the COVID-19 shutdown. The presentation will explain how the above photo project, campus workshop, and survey should be implemented and showcase the preliminary research about permaculture and sustainable agriculture. Once the data is collected, a second campus presentation should be given to the CCU community and board of

directors in order to outline the food forest and find funding. After the presentation occurs, the CCU community can provide feedback, so one day the food forest can be executed.

**Description:** For my senior thesis project, I am establishing a plan for a food forest. A food forest is a 7-layer system of sustainable gardening. It will function year round, and mimic the ecosystem and patterns part of campus. The garden will produce plants, vegetables, and herbs. It will be located in the central part of campus with benches and walking paths.



1. Are you a current: student, faculty, or staff member?

- a. Yes
- b. No

2. What is your primary relationship to the university?

- a. Faculty
- b. Staff
- c. Freshman
- d. Sophomore
- e. Junior

f. Senior  
g. Graduate student  
h. Other \_\_\_\_\_

**3. How do you feel about Coastal bringing sustainable (self-supplying) agriculture (growing of food) to campus?**  
a. Long Answer: \_\_\_\_\_

**4. How do you see yourself using the food forest?**  
a. Class involvement  
b. Quiet place to read/study  
c. A snack on the way to class  
d. Enjoy nature  
e. Other: \_\_\_\_\_

**5. How would the addition of a food forest affect your CCU experience?**  
a. Long Answer: \_\_\_\_\_

**6. Would you be interested in participating in the food forest creation or maintenance?**  
a. Yes  
b. No  
c. Maybe  
d. Other: \_\_\_\_\_

**7. If you are interested, how do you see yourself participating?**  
a. Long Answer: \_\_\_\_\_

**8. What additional ideas do you have for the food forest?**  
a. Long Answer: \_\_\_\_\_

**Figure 2.** Food forest survey questions

**RESULTS:**Universities Examples

While conducting my interview with Andrew O’Flaherty he provided some insight into how specifically a university garden can be run and maintained while taking into consideration school breaks, student’s schedules, and funding. The SCG, as well as I and many others, saw the need for sustainable food production in our society (O’Flaherty, 2019). They have implemented programming, farming techniques, and outreach to embody and reduce this need for industrial agriculture. SCG’s infrastructure consists of approximately a 1acre space on campus behind residence halls (O’Flaherty, 2019). The garden contains 15 raised beds, 12 student plots, a U-pick walkway, and an orchard. Student plots are smaller raised beds which provide students the opportunity to “lease” an area to grow their own food. The garden also makes use of ¼ of a greenhouse located in the same area. SCG practices organic farming and permaculture, therefore no large machinery has been used, no tilling, no spraying and no synthetic fertilizers (O’Flaherty, 2019). Andrew O’Flaherty mentioned the importance of cover crops to increase the organic matter in their soil. He also mentioned that the garden is non- GMO. Similar to how I want the food forest to be created at Coastal, SGC’s students run the garden with the help of the Garden Manager (staff). The Garden Manager trains interns to work and manage volunteers in the garden. They have daily garden shifts, which are 2-4 hours a day to work with student schedules, where trained interns are out in the garden working with volunteers to complete tasks (O’Flaherty, 2019). Over the summer, SCG hires 2-to-3 part-time interns to help maintain the garden. And over the winter, they have the Garden Manager maintaining the garden with the help of some interns who may stick around before and after Christmas (usually the garden is

more dormant and does not require as much attention) (O’Flaherty, 2019). Andrew O’Flaherty mentioned the use of plastic tarps over some of the beds to allow vegetables to grow throughout winter. He mentioned how the garden has grown and evolved since its origin to have students sell CCF&G’s harvested fruits, vegetables, and herbs to the surrounding communities and university dining services. If there is a surplus of produce it was donated to local food pantries (O’Flaherty, 2019). SCG prides itself on a successful growing season as the result of the energy, vision, and hard work of their students, and the tremendous support of the many partners (O’Flaherty, 2019).

### Photo Project

The photo collage will visually demonstrate the interest for the food forest, and outline what the food forest means to that participant. This will also exhibit the variety of reasons and individuals on campus who would come together as one community to better the environment. The photo collage also shows Coastal’s board members the community’s support for the project to provide evidence for funding.

### Campus Workshops

Campus workshops introduce the new concept of food forest and allow participants to investigate the idea further on their own, or ask questions and provide collective feedback. They are a great educational tool and vital for community input.

### Survey

The survey of Coastal’s population is necessary to raise awareness of the project on campus, collect feedback on how students, faculty, and staff could utilize the space, and show board members the support for this project. Potential interest in participation of

the food forest will be tallied to determine community involvement. The responses from the survey on how the Coastal community plans on using the food forest will provide a clear structure to best meet the community needs. Subsequently, the other questions are open ended and require further interpretation. These responses will help formulate the education level of the Coastal community on sustainable agriculture and how willing they are to help take on this project which could lead to potential funding. The results of this study will be shared in a public presentation. The Coastal community will benefit by having input in the design of a food forest on CCU's campus and learning about concepts related to sustainable agriculture.

### Campus Presentation

To guarantee a future for the food forest, a presentation to campus environmental organizations and various departments will be shared along with surveys and photo projects to gather interest in the Coastal Community. A presentation also allows the CCU community to educate themselves on potential ways they could positively influence our community and provide them the ability to get involved on campus to help the environment and meet new community members.

### **DISCUSSION:**

When determining what project I wanted to complete for my thesis, I had very big ambitions and wanted to complete a community garden by graduation. I then talked to my honors

advisor, who reigned in my plans and told me to be sensible with a timeline. At this point, I had very little knowledge of growing or agriculture other than a small garden growing up, and very little knowledge of South Carolina's growing seasons since I was from Pennsylvania. With the lack of knowledge, I dove into research and reached out to advisors in different departments trying to prepare myself to create a cohesive plan. At first, I felt very overwhelmed with all the new knowledge and options, as well as the project timeline. It was clear with all the paperwork and logistics of planning a project that the timeline would need extended until after I graduated, and then again when the COVID-19 pandemic hit and I was no longer able to do any surveying or data collection. At first this was kind of disappointing leaving my project in the hands of an organization or department to carry out because I have so much passion and expectations for how the space will help. It is hard to trust someone else to take over my vision but the more I discuss the preliminary research and ideas for the project with others, the more confidence I have that others are just as passionate and will see that the food forest will be carried out to its fullest potential.

The food forest outline provides the first key steps to connect sustainable agriculture to Coastal's community by providing a living-learning center to make conscious food choices, build relationships, discuss the current state of our food system, and take action to improve it. Once an organization or a department follows through with the plan, students and faculty will demonstrate the necessary tools and experiences for our campus to pursue research, teach academic courses, and build and enhance urban agriculture. I believe the food forest is vital to bring awareness about sustainable agriculture to campus and provide hands on experience for students to get involved. Learning to grow plants and how our food is affected by its

surroundings will help the Coastal community empathize and question the quality of the food and path it traveled to get to their table. I hope another student or the SPROUT organization on campus continues with my plans and implements the food forest.

Throughout my time at Coastal, whether in a classroom learning about all aspects of Marine Science or in a club, I have come to realize the importance of good stewardship. As a Marine Science major we look at how all aspects of science (mainly focusing on the ocean) are affected by others in the food web and anthropogenic processes. One study area heavily used by Coastal students for research is Winyah Bay which connects our surrounding river systems to the ocean. Over the years runoff has affected the river and species within. Industrialized agriculture practices dump excess nitrogen and phosphorus, as well as harmful pesticides into the water and cause harmful algal blooms and animal death which contribute to many negative repercussions. In our community by producing a food forest which does not use fertilizer, and pesticides we are positively contributing to our local ecosystem. Additionally, my HONR\*304 H1 lecture with Dr Abel outlined good and bad sustainability practices all over the world from agriculture to technology. As you look around at your daily waste and impacts you start to lose hope that the world will ever recover. However, sustainable farming is a huge way Coastal's campus can beneficially influence the community and set an example for future minds of America through education and practice. My hope is this project becomes a reality because a food forest can cultivate a positive environment for students, staff, and faculty to learn how to manage natural resources to prevent exploitation, destruction, or neglect.

**FUTURE PLANS:**

After discussing my project with Dr Cagalanan and Dr Mokos, I have confidence both women and SPROUTs organization will take over and conduct the photo project, workshops, and survey before creating the actual plan for the food forest. Projects as big as this often included multiple levels of communication with students, faculty, staff, social media and organizations.

As far as planning goes, in the future once the surveying data is done, the final location will need to be chosen to create a vibrant community experience. Some parameters I recommend they use are: space, sunlight, water, campus proximity, and convenience. Next, a realistic timeline of events was created based on resources, equipment, material, labor and other necessities. This is where further research on growing seasons, plant species, and care for plants should happen. Once the space is chosen, and the timeline is established, a financial plan needs to be created. Financial planning is critical and required thinking a year or more in advance especially at a University where funding processes and applications take time. The last key part of planning for the future is maintenance. Having an upkeep plan for both the social system and physical food forest is important. The food forest will need a stable social system of volunteers and maybe down the line employees to maintain and schedule small amounts of maintenance or programs. As far as physical maintenance, making sure trees, bushes, etc. are all structurally okay so the food forest can virtually sustain itself.

Once the food forest is up and running I would love to see it grow like SCG's program. First, the incorporation of the garden with one or more of CCU's kitchens on campus. Dining halls are a great way for students to be educated on their impacts to the agriculture industry and

practice sustainability. If the food forest could supplement some food from farms that use fossil fuels to deliver the produce, it would cut down on CCU's carbon footprint. I understand this would be a distant goal and potentially seasonal, but every little bit helps us to be a little more self sustaining. Additionally, Coastal is always trying to get involved with the community so providing potential classes or community activities with local schools or summer camps could expand and strengthen our community partners. As far as academics, the food forest would provide hands on experience for many disciplines, as well as a great educational tool for some classrooms. The food forest could also provide a safe, quiet study space or gathering place for students to meet up and do work. Again, it is vital to gather feedback from the Coastal community to see how it can best serve students, faculty and staff. This is where polls, surveys, and social media will be very helpful.

## **CONCLUSION:**

The significance of this study is to assess student, faculty, and staff interest in sustainable agriculture, to understand how the food forest would be most utilized by the campus, and to collect potential new ideas by conducting a photo project, workshop, and survey. I hope with this preliminary research and the passion for sustainability, others at CCU will carry out the food forest project.

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