Hydroponic Food Garden Proposal
Sponsoring Club: Food Activists Revolutionizing Meals (FARM)
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Introduction
The student organization, Food Activists Revolutionizing Meals (FARM), seeks to create a student run community garden. This garden will promote students to learn, research, and come together through gardening. FARM is a special interest group that unites interdisciplinary undergraduate and graduate students from a variety of majors and backgrounds. Our mission is to unite the USF Tampa campus with local, healthy food. Over the past five years the plan for a garden has been developed to be an environmental, educational, and community resource to add to the other environmentally responsible projects at USF.

This project uses the precedents set by the University President’s Climate Commitment to conserve energy, reduce energy costs, lower greenhouse gas emissions, and promote renewable energy. This project will be initially funded by the Student Green Energy Fund administered by the Patel College of Global Sustainability.

Objectives
• Educate community members about sustainable, small scale agriculture
• Hands on learnings related to natural, social sciences, English, public health, etc.
• Teach useful skills in hydroponic systems, maintaining plants, self sustainability, nutritional education
• Heal the disconnection between college students and nature and promote environmental stewardship
• Sell produce in FARM’s Farmer’s Market and at Tarek’s Cafe
• Take the first step to implementing food gardens on campus
• Promote active learning, research, and student engagement
• Encourage school pride

Hydroponics
This method of growing plants in nutrient solutions with an artificial medium and mechanical support provides protection from soil borne diseases, control of runoff, and cost efficient. It also provides conservation techniques such as temperature control, reduced water loss, low insecticide usage, no crop rotation, high density crop production, and efficient use of fertilizers. The produce is less vulnerable to injury and nutrients can be easily recycled. The initial capital and energy inputs will be made back quickly with high quality garden vegetables.

The application of their proposal can open the door to other sustainable practices at USF such as composting, permaculture, and sustainable dining.

Design
Created by Tarek Elsayed
The aggregate hydroponic system base is PVC pipes and metal poles set up 5ft above the ground surface for easy access.

Would you support a community garden on campus?

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<th>Definitely Yes</th>
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The ground is covered in black plastic for heat retention. The pipes are filled with perlite and vermiculite (both safe mediums). A feeder line is then ran down the center of each pipe and also covered with black plastic. Tanks are positioned at the edge of the garden. These are connected to an electronic pump that filters out unwanted particles (excess salt). A chiller is attached to the tank-to-pump-to-feeder line system to maintain a temperature below 72°F. This prevents algae and bacteria (nematode) buildup and creates a cycle of nutrient-rich water.

\[ \text{Water} + \text{Nutrients} + \text{Photosynthesis} \rightarrow \text{Growth} + \text{Oxygen} + \text{Waste} \]

Plants face to square meters, eggplants, and tomatoes are being maintained in this system due to the root stability and metal rods for growth support.

Timeline

• **January:** Proposal is submitted to Patel College
• **April:** Proposal is approved by SGEF Council
• **May:** Hydroponic construction started
• **August:** FARM holds a series of educational workshops
• **September:** Maintain seedlings in nursery
• **September:** FARM has first planting
• **October:** First harvest of herbs
• **November:** First harvest of cucumber and squash and tomatoes
• **December:** First harvest of eggplant and bell pepper
• **December:** Second harvest of herbs

Research/Educational Opportunities

Kristyn Rodzinyak is a Ph.D. student under Dr. Matthew Pasek in the School of Geosciences. Their lab focuses on phosphorus research. Within agricultural systems phosphorus is an important nutrient for plant growth. Hydroponic systems are ideal for investigating phosphorus uptake in plants. Ionic concentration is dependent on stable growing conditions. Different species of phosphorus ions (phosphate and phosphite) can be used as fertilizers and are stored in substrate such as dust so experiments in the lab will be done with a non-reactive substrate. The preliminary work with phosphate fertilizers indicates increased yield and decreased disease occurrence. Both these characteristics would be desirable for hydroponics growth. Both Ms Rodzinyak and Dr. Pasek are supportive of having additional students researching in the lab. There are currently 3 undergrads working in the lab, one of whom is researching plant phosphorus uptake.

Laurie Walker of the USF Botanical Gardens has created a substantial learning environment through classes such as Plant Identification, Forestry Methods, and Environmental Science lab. Each of these classes has a field component in the garden. This method can be translated to FARM’s garden where professors can take classes to the garden for hands on learning.

Dr. David Royal among others in the INTO English Language Department who would be interested in using the food forest as part of one of their classes. A number of our content-based English language classes include units on nutrition and the environment, and the garden would be a great site for either a field trip or a class project. These students do not normally have vehicles to go off campus and the garden would be a convenient location for environmental learning.

Dr. Mark Hafen of the School of Geosciences has pledged support of the interdisciplinary opportunities from the Environmental Science & Policy program, Urban & Regional Planning program, and USF EcoMentors program. These programs provide courses on biodiversity, sustainability, local food, and urban and organic farming. The garden can be an outdoor laboratory and a place for environmental projects.

FARM members during an educational farm day with Dr. Dell DeChant.

Supportive Individuals and Organizations

• Student Environmental Association (SEA)
• Center for Leadership and Civic Engagement (CLCE)
• Natalia Dengler (Tampa Eden Project)
• Colleen Mulcahy (College of Arts and Sciences)
• Dr. Christian Wells (Department of Anthropology)
• Dr. Dell DeChant (Department of Religious Studies)
• Dr. Jennifer Marshall (Department of Public Health)
• Dr. Laurie Walker (USF Botanical Gardens)
• USF Community Garden Collaborative
• Urban Sustainable Food Policy Research Group
• Whitman Organics
• Patchwork Farms