‘Our goal is to create a state-of-the-art educational R&D Facility’

Florencia Farm Innovation Lab

On-site Farm Research Lab

Prince George’s Community College at Florencia Farm Innovation Lab Innovation Lab will be an educational R&D Agriculture Facility, located in Upper Marlboro, Maryland. Florencia Farm Innovation Lab in partnership with Prince George’s Community College, MSDE (Maryland State Department of Education), and The Whitlow Foundation will collaborate on designing this new addition to the innovative agriculture curriculum and programs at Prince George’s Community College Culinary Center that deliver rigorous and relevant education for the next generation of students.

The facility will be a set of labs that act as a dedicated off-site information relay for the college’s agriculture and innovation programs. Its goal is to help students and educators connect real-world scientific research with classrooms and the public at large.Using a 3,600 sq ft underused barn: The disused barn will be converted into sustainable state-of-art farming and agriculture educational lab complete with a food demonstration kitchen. Also, the converted barn will provide experiential education opportunities for a wide variety of disciplines, from the obvious agriculture, aquaponics, and horticulture to ecology, design, inspiration for the arts, communications, and marketing. We will start this plan this fall with the design and implementation of the first of six (6) micro-lab developments in the barn. This model will serve as the prototype for the concept.

However, the most important lessons learned on the farm and at the lab will be about growing as people: learning their responsibility to the earth and food sustainability, flexibility, perseverance; gaining problem-solving skills, and looking at the world from a next generational lens.

There is a huge gap in the supply and demand of fresh Heritage Foods in the US due to multiple factors such as the high labor cost associated with the production of ethnic or heritage crops, a high price in the existing market, and other structural issues in the US food system which favors commodities such as corn, soy, and other monoculture types of products.

**The Proposed Solution And Mission**

Today’s students are far more diverse -- racially, economically, and socially -- than ever before and, the job market colleges are expected to prepare them for is changing rapidly amid globalization, automation, and other technological advances. Slow, steady evolution is now a luxury few higher education institutions can afford.

If institutions hope to survive and thrive in the future, they will need to adopt new methods for change -- whether programmatic innovation, advances in student support, or improvements in business processes. In particular, they will need to create mechanisms, tactics, and safe spaces for rapid experimentation.

That philosophy is at the core of the innovation labs--as a forward-thinking college, the Culinary and Wellness Center will turn their long-standing r&d capacity toward their external institutional design and curriculum. As a local community farm, it’s a time to celebrate the connections between schools, farmers, and locally produced foods by having an open approach that helps children and families understand where their food comes from and how their food choices can impact their health, the environment, and their community.

Florencia Farm Innovation Lab is committed to contributing to the fight against hunger in the community through the production, promotion, and distribution of fresh fruits and vegetables grown using regenerative practices to reduce the impact of farming on the planet through better water management, reduction of artificial inputs such as chemical fertilizers and insecticides, reduction of food loss and waste through efficient storage and composting.

The vision of Florencia Farm Innovation Lab and Prince George’s Community College is to become a hyper-local platform for students and the creation of a more efficient food system in our community and beyond, thus contributing to the increased uptake of fresh fruits and vegetables in under-served communities including minorities and immigrants with special dietary needs and habits while helping to eradicate hunger and health disparities. This collaborative platform could bring together producers, distributors, and consumers to increase the study,availability, and affordability of African heritage foods.

Presently, the farm promotes, produces, and distributes specialty crops with an emphasis on Afro-Caribbean fresh vegetables. It grows a limited quantity of traditional vegetables such as collard greens, kale, mustard greens, and herbs and spices, and specialty crops such as Nigerian and Malabar spinach, callaloo, and African eggplants.

The farm has established relationships and agreements with small-scale farmers in the DMV who are engaged in the production and distribution of ethnic foods to be a food hub from where aggregation of harvest from the network of farmers could be stored for timely distribution to the customers.

Also, Florencia Farm Innovation Lab is registered to supply farmers’ markets in the DMV region and beyond, as some of the produces are in high demand throughout the country.

**Partnership with Prince Georges Community College-MSDE-The Whitlow Foundation**

As an urban farm based in Prince George’s County, Florencia Farm Innovation Lab will be a natural partner with Prince George’s County Community College’s Culinary Arts Center, MSDE, and The Whitlow Foundation especially in education and outreach to the wider community. John Manirakiza, the farm manager of Florencia Farm Innovation Lab has over 10 years of experience working with educational institutions from elementary school to higher education in the food production, promotion of specialty foods, creation of new markets.

Chef Shawn Lightfoot is the farm’s chef and has over 30 years of food education, preparation, and food distribution. He will be tasked with creating easy recipes based on the crops that are produced and educating the students and the larger community on sustainable food access and the health benefits.

Also, Florencia Farm Innovation Lab provides a great opportunity for community members to learn about the food value chain, from seed to table, using various production methods from the traditional to the modern vertical growing through hydroponics and aquaponics…

**An Opportunity for Collaboration**

There is a global trend toward farm to fork model of food consumption, especially when it comes to a plant-based diet. Also, as more consumers become more aware of the link between diet, health, and wellness, food producers must work with specialized institutions such as PGCC Culinary Arts and Wellness in the creation of evidence-based programs to educate the consumer on how to prepare delicious, healthy meals, even using specialty ingredients such as those grown at Florencia Farm Innovation Lab.

**Maximizing space**

Getting the most out of the space we have available will save money and make the lab more efficient and productive. To maximize space, we will need to identify the main functions and purpose of the lab, keep ergonomics in mind, and know how many people will be using the lab regularly and the space that specialized equipment and other materials will take up if necessary.

**Costs**

Choosing the correct lab furniture and casework in cost-effective and functional materials will help us stay within budget. Conducting an on-site assessment will help estimate our budget based on the space’s unique needs and features.

After having a solid design for the lab renovation, we must choose the materials that fit within our budget but are still functional and safe.

While considering renovation costs, we should plan for expected costs such as labor, installation, project management, demolition, and materials. Making extra room in our budget for unexpected costs such as overtime pay and issue resolution is also imperative.

**Range in Costs Per Square Foot**

Depending on the amount of demolition required and other variables, the range in cost per square foot may vary. We may be in the $75-$125 per square foot range based on my research on similar projects. Fortunately for us, the renovation or repurposing of the existing barn space is much less expensive per square foot than building from the ground up.

The extent of the renovations (i.e. demolition needed, new hardware installed, building issues) will determine or at an in-kind donation, our cost per square foot. If the need for these services is low, and our lab already has many of the features needed to be repurposed or improved upon, the cost per square foot will be lower.

**Lab Equipment and Furniture**

Our lab furniture should help maximize space, support workspace ergonomics, and function for what we may need, which hasn’t been determined. The lab furniture needs to work for our type of lab, have features that ensure the safety of the student researchers and lab technicians, and supports the efficiency of the work we are trying to achieve.

**Casework**

Choosing the correct dimensions and material for our casework is necessary for a safe and efficient lab. Deciding between wood, plastic laminate, metal, and stainless steel should depend upon the type of lab we are renovating, as well as our budget.

Budget $450,000.00

**SUMMARY AND FEASIBILITY STATEMENT**

Florencia Farm Innovation Lab finds the development of the Innovation Lab to be feasible. It has support from both county leadership and the community, and there are foundations eager to fund projects that are transformational for the county. Moreover, grant funds are available to fund infrastructure improvements, construction, and operations.

Below is an overview of noteworthy feasibility findings:

Assessment Area

Positive Feasibility Notes

Market Assessment

• Confirmed demand for: 1. Workforce training; 2. Community kitchen; 3. Food related recreation and tourism; 4. Farm products aggregation; 5. Youth and rural entrepreneurship programs;

• Immediate need for cold storage and logistics services.

• Identified collaborative marketing, distribution, and manufacturing partners.

• Clear demand for flexible processing and value-added capacities to enhance supply chain resilience.

**Site Identification**

• The site that is designated and suitable for development of the FFIL is located on Florencia Farm in a 3600 sqft disused barn.

**Organization and Management**

• Florencia Farm Innovation Lab can be successfully managed by The Whitlow Foundation a non-profit 501(c)(3) to achieve the social mission of Florencia Farm.

• Local farm and business leadership support Florencia Farm Innovation Lab.

• A capable local facility manager has been identified.

**Financial Analysis**

* Florencia Farm Innovation Lab requires $450k to capitalize and will require grant funding.
* Grants and Spronsorship
* Financial analysis demonstrates that Florencia Farm Innovation Lab can break even by year 3.
* Funding
* Regional philanthropies indicate strong interest in funding the project.
* Florencia Farm Innovation Lab is attractive to tax-motivated, mission driven private investors.

Still, there are risks that need to be mitigated for successful implementation. The areas of risk include management, regional labor conditions, supply chain issues that increase construction and equipment costs, macroeconomic trends that may limit facility usage, and food safety regulations. These are not insurmountable challenges but will require strong leadership and a qualified management team. Moreover, it is important to secure funding before delving further into the next steps for bringing Florencia Farm Innovation Lab to fruition.

The next steps for this project will involve ironing out the details for property, environmental assessments, utility infrastructure expansion, and securing grant funding. Then the project partners should work with key stakeholders to finalize the engineering and design of Florencia Farm Innovation Lab.

**THE AGRICULTURAL INNOVATION LAB**

**Background**

In the summer of 2020, Florencia Farm, The Prince George’s Community College’s Culinary and Wellness Center, and The Whitlow Foundation’s collective impact approach was envisioned. This strategic plan included recommendations for advancing the college and the county’s agricultural industry through, continuing education, infrastructure, entrepreneurship, innovation, and workforce development. Those recommendations were based on the realities at the time. Since then, the COVID-19 pandemic has caused disruptions that reveal underlying weaknesses in the nation’s food and farm system, which led to broken supply chains, scarcity of grocery store products, and increased food insecurity in most if not all under-served communities throughout the country.

Addressing these issues will require building a foundation for agriculture to become more localized, more diversified, and less consolidated. It also requires rural communities to become more resilient and adaptive to change. For the state of Maryland, the pandemic demonstrated the urgent need to address the challenges and opportunities within local food systems through an integrated initiative that incorporated the various ongoing food and agricultural activities.

**Concept Description**

The development of the Florencia Farm Innovation Lab is a response to the strategic planning goals and current needs in Prince George’s County. It is a multi-purpose facility that functions as an agricultural lab, food hub, integrates local food products, expands food pantry capabilities, provides educational programming and community events, and supports workforce development and continuing education programs.

It will be a key resource that helps build and sustain a resilient, innovative, and healthy food system. Its functions and services will help achieve six fundamental goals:

1. Support continuing education in agriculture

2. Increase farm profitability and long-term viability.

3. Support entrepreneurship and innovation.

4. Increase job opportunities.

5. Strengthen access to local food.

6. Improve health and wellness.

Vision: A resilient, innovative, and healthy local food system in Prince George’s County Maryland.

Mission: Integrate and strengthen local agriculture and food activities through infrastructure, support services, and community initiatives.

**SERVICES**

The proposed facility would support agri-businesses and the community by offering a shared aggregation and logistics center, shared processing/packaging equipment, a training and community kitchen, cold storage, educational programming, retail space, and entrepreneurial support. These activities can be summarized into six service or functional areas.

**Service or Functional Area**

Activities

Training and Community Kitchen

•Cooking classes (hands-on, demos, summer camp, corporate)

•Dining events

•Food development and manufacturing, culinary, or nutrition training

•Food safety training

•Recipe testing

•Small food processing projects (commissary)

Produce Packing and Processing

•High volume; up to 10,000 lb. batches

•Light processing (cut, chop, slice, dice, etc.)

•Raw, canned, and frozen

•Co-packing and processing service

•Farm-to-Institution opportunity

Aggregation and Storage

•Dry, cold, and freezer storage

•Walk-in and reach-in options

•Facilitate bulk buying opportunities

•Food bank storage

Food Locker Pilot

•Quasi last-mile delivery

•Increase food access

•Coordinate and pool deliveries

•Manage 3 locker sites

Flexible Community/Retail Space

•Food Pantry

•Food Prescription Program

•Indoor year-round farmers market

•Community and educational events

•Pop-up food retail/service

Support Services

•Group GAP

•Business technical assistance

•Recipe development

•Marketing and branding

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MARKET ASSESSMENT

Target Market Area

The market assessment and analysis focused on primarily Prince George’s County and region within a 150-mile radius of the DMV Metropolitan region. Unless otherwise stated, the term “region” refers to a 150-mile radius and the jurisdictions that are either fully or partially within this defined area.

**Innovation Lab Infrastructure**

THE OBJECTIVE-WHAT SERVICES SHOULD THE LABORATORY PROVIDE? The lab’s analysis is aiming to support decision making on soil fertility/salinity/pollution/other management, soil classification, evaluation of the soil for its use, research purposes, for the purpose of testing different seedlings (The Seed Savers Exchange in Decorah, Iowa, is a national organization dedicated to the preservation of heritage seeds and is an excellent resource for heritage crops),

There are specific procedures for each of the desired objectives

INFRASTRUCTURE AND FACILITIES AVAILABLE NEED FOR CONSTRUCTION OR ADAPTATION In general, all countries have national regulations for the establishment of laboratories. Electricity installations, pipes and wastewater recovery systems, aeration systems, emergency exits and all systems needed for the safe and efficient function of the laboratory should be considered during the identification or construction of the laboratory spaces. Cleaning and sanitary material like sinks and automatic dishwashers should also be considered during the laboratory’s design phase.

THE ANALYTICAL DEMAND TYPE AND AMOUNT OF ANALYSIS What soil analysis do you want to conduct? And how many samples per year do you estimate to analyse? Please note that investing in expensive equipment for analyzing only a few samples per year is not worth it.

AVAILABLE HUMAN RESOURCES OR NEED FOR TRAINING The minimum staff is one person in charge, preferably with two laboratory technicians and another person in charge of the quality control program. Staff working in soil chemistry laboratories especially, should be trained in analytical chemistry and preferably have experience in soil analysis

EQUIPMENT AVAILABLE OR NEED TO PURCHASE

QUALITY ASSURANCE When setting up a new laboratory, it is important to have a clear idea of objectives from the start and record information on the management of the laboratory beginning with planning process. This can be done in the form of a Laboratory Quality Manual (LQM) or other documents. In this regard, documents have to be generated according to the type, size and characteristics of the laboratory. The selected document must include at least the following points:

• the Organization and Organizational Policies (legal name and address of the laboratory, ownership and management structure of the laboratory, organization chart of the laboratory, clearly showing relevant internal organizational components);

 • the Laboratory Technical Staff (position description(s) for each technical operational position shown on the organizational chart, a description of the method(s) used to ensure all personnel are trained to perform tests conducted by this laboratory in accordance with standard procedures, description of the method(s) used to evaluate the competency of each staff member to perform tests conducted by this laboratory, to ensure all testing is performed in accordance with standard procedures);

 • the Laboratory Equipment, (inventory, including description of the procedures used for calibration and verification of equipment);

• the Test Records and Reports (methods used to produce test records and reports, proficiency sample test results, typical data sheets (test report forms)). On the internet, there are several examples that can be consulted for this purpose. If the decision to generate a LQM is made, please be careful to keep it updated in order to reduce the risk of relying on multiple, inconsistent documents. Indeed, as soon as the laboratory is set up and running, the LQM is usually replaced by other more specific and detailed documents.

FINANCIAL ASPECTS INITIAL/MAINTENANCE COSTS AND BUDGET The resources to install a soil analysis laboratory include the cost of infrastructure, hiring personnel (technicians and those responsible for quality

control including training),acquisition of materials and reagents (including proficiency sample tests), and acquisition of equipment (including calibration and verification of equipment, also service contracts for the equipment). Resources should also be considered to follow up on personal training, calibration and verification of equipment and their maintenance, and proficiency sample test, aspects that are costly and must be permanently developed. Costs associated with the general maintenance of the infrastructure such as cleaning, janitorial, technical and IT services must also be considered.

If the decision to generate a LQM is made, please be careful to keep it updated in order to reduce the risk of relying on multiple, inconsistent documents. Indeed, as soon as the laboratory is set up and running, the LQM is usually replaced by other more specific and detailed documents.

• Do not focus only on the budget you have available to establish your laboratory!

• Who will financially support the laboratory in the long term?

• Will you receive annual budget allocation?

• Does this cover maintenance of the equipment costs, the purchasing of chemical reagents, consumables, etc.?

• Does it include training costs and the recruitment of laboratory personnel?

• For certain equipment, do vendors assure effective maintenance and repair services?

• If using existing building facilities, does the budget include equipment installation costs, or costs for potential alterations to buildings?

• Energy and water supply costs Please do not move forward establishing a soil laboratory if you do not have a positive answer to these questions

Funding Resources for this Project

The Foundation for Food and Agriculture Research (<https://foundationfar.org/>)

MSDE

USDA



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| --- | --- |
| FIXED COSTS | Fixed costs remain constant and do not change over time or as the research volume increases or decreases. |
| VARIABLE COSTS | Both time and the volume affect the variable costs. |
| DIRECT COSTS | Direct costs are directly connected to the laboratory output. |
| **I**NDIRECT COSTS | Indirect costs are the overheads not directly connected to the output of the labs |
| **FIXED – DIRECT** | **FIXED – INDIRECT** | **VARIABLE – DIRECT** | **VARIABLE – INDIRECT** |
| * Equipment purchases
* License Fees
* Researchers salaries
 | * Rent
* Utilities
* General administration
* Support staff
 | * Reagents
* Test supplies
* Consumables
 | * Waste management
* Space/rent
* Utilities
 |