

The Orenda Foundation:



**Expanding Kenyan Permaculture with
Mushrooms.**

EXECUTIVE SUMMARY

Many developing nations have both a large agricultural sector to their economy, and a pronounced need for economic development. The nation of Kenya is an excellent example. The CIA claims that a third of Kenya's GDP is from agriculture, and that 75% of the population works in agriculture at least part time (World Factbook). Agriculture produces a significant amount of waste that is generally unsuitable for other uses. Edible mushroom cultivation is a low-cost, low-tech way to enable Kenyans to put food, and money on their tables by using waste byproduct. This project financing plan explains the details of an expansion to the educational programs of the Orenda Foundation. The expansion to the training venture will have the objectives of: 1. Creating a curriculum for edible mushroom cultivation specific to Kenya's climate, and conditions. 2. Assisting with the construction of grow facilities and technical assistance to participating Kenyans for the purposes of cultivating their own edible mushrooms. The Orenda Foundation will petition for a \$25,000 grant from AGRA to facilitate the accomplishment of these goals.

Need Assessment

The Kenyan economy is dependent upon the agricultural industry: Coffee, corn, and beef are some of the countries largest exports, and all of these produce waste byproducts that can be used to grow edible mushrooms (World Factbook). The nation of Kenya also reports significant rates of malnutrition as recently as 2019 (De Vita, et al.). Mushrooms could help alleviate this as they are known to be good sources of protein, as well as other vitamins and minerals (Valverde, et al.). Orenda Foundation is a recently created non-profit organisation currently working in the area of permaculture and agricultural education. Orenda Foundation is a non-profit organization directed by Raymond Orenda. Raymond owns and operates an organic farm in Oyugis, Kenya, and has a long standing relationship with U.S based mushroom firm "MycTyson Mushrooms". **The U.S based mushroom firm has agreed to donate 5% percent of their sales to the**

Orenda Foundation for an indefinite time period. They have also enabled Raymond to begin construction on his own initial growing facilities via their donations. Initially the Orenda Foundation expansion will be to assist local farmers in the Oyugis area with setting up their own mushroom growing operations, and teaching them how to grow mushrooms. The Foundation has long term goals to expand operations to other poor, rural Kenyan villages.

The Orenda Foundation is already doing work to integrate the concepts and techniques of permaculture into traditional Kenyan agricultural methods. The goal of permaculture is to arrange and cultivate plants in such a way as to emulate the most successful of natural habitats. Mushroom cultivation is a natural, and significant component of a complete permaculture system. Mycologist, Paul Stamets, lays out a number of ways fungi can be beneficial in a permaculture farming system in his book *Growing Gourmet and Medicinal Mushrooms* (Stamets). Agricultural byproducts such as chaff, stems, stalks, and cattle dung are all suitable growth mediums for edible fungi. The Orenda Foundation has constructed a training center in Oyugis that accommodates 25 people and has trained more than 120 community members in permaculture technique by their own accounting (Orenda). The expansion of this initiative to include mushroom cultivation has the potential to be significantly beneficial to the population it reaches. Producing edible mushrooms gives the local people the ability to turn waste materials into food directly, instead of using it solely for compost production. Mushrooms produced can also be sold by the farmer to boost individual, and community incomes.

Objectives

With the commitment of funding the Orenda Foundation would be capable of taking immediate steps toward the accomplishment of its goals. By the end of the first year from reception of funding the foundation would be likely to have quantifiable data on the initial results of the program.

The stated goals for the expansion program are as follows:

1. To produce a comprehensive body of information on how to cultivate various species of mushrooms in Kenya.

In order to achieve the foundation's other goals it is necessary to have an understanding of best growing practices in the region. This knowledge will also be necessary for teaching others how to grow mushrooms in the region. This goal will likely never be fully accomplished and will be subject to change as new information is gained.

2. To assist with the construction of cultivation facilities

This portion of the Foundations mission will also be ongoing, but within the first year the Foundation aims to complete at least 10 cultivation set ups with different members of the community. The Foundation intends to commit both financial resources, and personnel to aid in the construction. MycTyson Mushrooms has also pledged to send volunteers to aid in this process.

3. To provide technical assistance to local farmers who participate in the mushroom growing initiative.

Technical assistance will be offered on an ongoing basis, provided as requested.

Technical assistance refers to assisting program participants with potential issues they could run into in the process of cultivating mushrooms. This assistance will be offered in the form of local's who have been educated in the systems and methods of mushroom cultivation in Kenya. Assistance will also be available online via the Foundations website. After a few years of operation there are also plans to publish a book on the specifics of mushroom cultivation in Kenya.

Project Description

The proposed project is composed of 3 separate but related activities:

1. Creating a curriculum of Mushroom cultivation knowledge for growing in Kenya.

The creation of a source of information can be used to teach others how to cultivate mushrooms in the Kenyan environment. Orenda Foundation director Raymond Orenda

will develop this body of knowledge along with the American firm MycTyson Mushrooms. The firm will both guide him through the ordinary process of cultivation and adapt these processes as needed for the Kenyan environment.

2. Construction of mushroom cultivation facilities in Oyugis, Kenya.

Upon receipt of funding, and successful results from the first Orenda Foundation growing operation, the Orenda Foundation will begin the construction of cultivation facilities for participating members in the initiative.

The type of facility constructed can vary depending on a number of factors:

1. The type of mushroom being produced
2. Available construction materials
3. Available electricity and water
4. Local topography and fauna

The average construction project for the foundation is assumed to be the modification of existing farm structures to be capable of maintaining suitable cultivation conditions. One construction technique used in Kenya are mud brick structures. Which can be readily modified to be appropriate for this use. Metal or wood, together with plastic can also be used to construct greenhouse-like structures that can be appropriate for some conditions.

3. Providing technical assistance to participating farmers.

There are many potential issues that a mushroom farmer can run into. Most of them are relatively easy to fix, but it can be difficult for a novice to know they are making a mistake. Similarly, it can be easy to identify the problem, ie. no mushrooms being grown, but there could be many causes of that specific issue. Providing participating farmers with a resource to refer to for assistance with these matters will increase the overall success of the program by decreasing instances of failure, allowing for the collection of region specific cultivation data, strengthening the relationships between the Foundation and participants. The Orenda Foundation intends to provide ongoing assistance locally by having knowledgeable members of the initiative visit those members who request it. Initially this will mean Raymond, or U.S based volunteers investigating, and assisting with these issues. Growing access to the internet in rural Kenya leads

the foundation to believe that publishing information on their website and making that resource known is a worthwhile strategy.”More than 45 million Kenyans have mobile phone subscriptions, and over 99 percent of Internet subscribers access the Internet via mobile phones and other mobile devices” (Suri). Eventually the foundation aims to publish printed resources that will provide assistance.

Evaluation

To determine the success of the project The Orenda Foundation together with MycTyson Mushrooms will evaluate the project. The following methods of monitoring the project have been proposed:

1. To evaluate whether or not the foundation has managed to complete a curriculum for mushroom cultivation in Kenya the duo will look at the number of classes on cultivation that have been held, the number of locals trained, and whether or not those individuals are successfully growing mushrooms.
2. To evaluate whether or not the foundation is constructing an adequate number of growing facilities, and whether those facilities are adequate, the available funds for such purposes will be compared against the number of projects undertaken, projects completed, and average cost per construction project. The output variation of different structure types will also be tracked for the purposes of identifying efficient vs inefficient structures. Whether or not the program managed to complete 10 facilities in the first year will also be checked.
3. To evaluate whether or not the technical assistance program is functioning as intended the Orenda Foundation will survey all participants for their satisfaction of the program as a whole, but most especially the technical support program.

These metrics will be examined both 6 months, and a year from the date of the project becoming officially active.

Future Funding

Future funding for the project will be in part provided by MycTyson Mushrooms who have pledged to donate 5% of their annual income to the project indefinitely. The Orenda Project intends to fund the remainder of future operations with funds from the sale of cultivated produce, the foundation intends to form a cooperative of local growers once they exist in sufficient numbers. The foundation also accepts charitable donations both locally, and from abroad.

Budget

Personnel: All personnel are volunteers

Equipment and Supplies:

Construction materials: \$12,000

Cultivation equipment: \$4,500

Tools: \$1,000

Volunteer Travel Assistance:

U.S Volunteer travel assistance \$5,000

Curriculum Development:

\$2,500

Total: \$25,000

Personnel: All Kenyan participants will be local farmers doing so for the benefits of learning how to cultivate a new crop. American participants are doing so on a volunteer basis.

Equipment and Supplies: The modification of Raymond's farm to enable the cultivation of mushrooms cost \$900, and we are aiming to construct 10 in the first year. Cultivation equipment in this instance refers to methods of maintaining humidity, temperature, and airflow that do not rely on electricity. Methods such as, evaporative cooling, soaking vermiculite, regular fanning by hand. Tools refer to various hand tools needed in construction such as hammers, saws, etc.

Volunteer Travel Assistance: Flights from the U.S to Kenya are about \$1,000 roundtrip so some funding will be set aside to assist volunteers from MycTyson Mushrooms in traveling to assist with initial setup and training.

Curriculum Development: Some funding will be set aside to allow for trial and error in the process of developing and adapting growing techniques for the Kenyan climate and region.

References

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