

CATHOLIC DIOCESE OF MOSHI URU FARM REHABILITATION
SITUATIONAL ANALYSIS AND STRATEGIC RECOMENDATIONS

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ABSTRACT

The Uru Farm is currently in a state of dilapidation and is producing limited amounts of coffee, bananas, and avocados, which have not consistently generated profits over the last three years. The Moshi Diocese has begun to rehabilitate the farm and desires to turn the farm into a profit center which will help support the Diocese's other activities. The Diocese efforts have been stifled by limiting factors including water shortages, weather, marketing, inexperience personnel, and capital requirements. The Diocese will be able to overcome these issues and achieve profitability by divesting from coffee production and focusing on high value vegetable and fruit production.

SWOT ANALYSIS

STRENGTHS

- The farm's soil has good depth and quality and can support a wide diversity of crops.
- The farm has 60 acres of coffee in production and the farm has been rehabilitating blocks of coffee in an effort to increase production.
- The coffee production area has a decent amount of large tree cover which provides shade that is beneficial to the coffee plants growing below.
- The avocado plants that have been recently cultivated are growing well and are healthy.
- The avocados are picked and sold by a local company which ensures a readily available market for the avocados produced.
- There are many different coffee buyers and processors in the Moshi region.
- The farm has been keeping bees which help with the pollination of all flowering crops.
- There are many willing day laborers in the farm's vicinity.
- The farm is neighbored by a large scale coffee plantation that has implemented many industry best practices which has been a source of learning for the farms leaders.
- The farm is located at the base of Mt. Kilimanjaro and is in a lush and beautiful area.
- Moshi is a major tourist destination that attracts people from all over the world. There are also many expatriates that have made Moshi their home.
- The political climate in Tanzania has been stable and the new president seems to be intent on decreasing corruption and improving the business climate.
- The government has promised to make improvements to infrastructure including roads and ports.
- The demand for food stuffs in Tanzania is growing commensurate with population.

Weaknesses

- Coffee prices are near historical lows when adjusted for inflation. The real price of coffee has not kept pace with the real cost of production.
- Climate change has reduced the amount of rain at the farm and has reduced the amount of runoff water from Mt. Kilimanjaro available for irrigation. Originally the farm was able to receive water from traditional furrows, but now the furrows have gone dry.
- The farm's improvements and equipment are in a general state of disrepair. The tractors are not functioning and the coffee processing buildings and equipment are no longer functioning properly and the lack of water has made coffee processing more difficult.
- The farm manager and workers are very dedicated and hardworking, but lack extensive agricultural training and education.
- Many of the coffee plants are old and have not been rehabilitated or replaced.
- The farm has had difficulty procuring effective chemicals to control weeds, diseases, and pests.
- Weeds have overtaken the vast majority of the ground cover. The weeds use much of the rain that has fallen and has established a large bank of weed seed in the soil that will take many years to control and eradicate. Yellow/Purple Nutsedge (Guatemala) is a very prominent weeds and is extremely difficult to control due to its multi-method propagation and waxy foliage.
- The diocese is not in a position to invest heavily to fix many of the problems on the farm. Any solution must be sensitive to the lack of fund availability.

Opportunities

- There is significant local unmet demand for a number of different fruits and vegetables which are suited for production on the farm. The price for these items presents an opportunity for significant profit. These include:
 - Onions
 - Melons
 - Red Cabbage
 - Red and Yellow Pepper
 - Tomatoes
 - Strawberries
 - Garlic
- The Diocese could expand production on the farm by removing local farmers from its ground or by trading the land for their labor on the part of the farm the diocese operates.
- The coffee producing portion off the farm is in a desirable area that is in reasonable proximity to Moshi and Mt. Kilimanjaro.
- Moshi is a major tourist destination and home to many expats.
- There is demand for coffee farms from expats looking to retire or relocate to a tropical region.
- There is a significant demand for avocados for local consumption and export.
- The area dedicated to avocado production can be expanded without reducing the amount of other crops grown on the farm.
- There is a significant export opportunity for fruits and vegetables.
- Over the long term there is the potential to secure irrigation water from a third party.

Threats

- Climate Change will cause fluctuations in the amount of rain that the farm receives and will increase the average temperature, exacerbating the periods of low rainfall.
- The infrastructure that supports the farm and its activities, including roads, electrical lines, domestic water supplies, are all subject to degradation if not maintained.
- Government regulation and corruption could limit the farms ability to access the supplies it needs as well as curtail opportunities to reach markets efficiently.
- The farm may have a difficult time finding interested and qualified third parties to partner with on the coffee producing portion of the farm if they choose to pursue that avenue.
- The cost of coffee could continue to decline in real terms.
- Input costs have continued to rise and show strong resistance to downward pressure due to the large number of middlemen in the supply chain.
- The vegetables and fruits that the farm could produce are currently high priced. This price premium could disappear as the market becomes more efficient and information about market prices becomes more readily available.
- The individuals managing the farms activities could be transferred to new areas and the expertise that they will develop could be lost.
- The farms neighbors may oppose any changes at the farm due to a possible perception that any changes or improvements may threaten their ability to continue farming on portions of the farm without paying any rent.
- The farm currently raises bananas on a good portion of the farm. Banana production in East Africa, and in many other parts of the world, is under serious threat from a new strain of Panama Disease, which could wipe out most banana plants on the farm.

Assumptions

The recommendations made in this report are based on the following assumptions:

- The farm will not have any irrigation water available in the short term.
- The Diocese does not intend to invest any significant amount of capital into the farm.
- The Diocese is willing to consider partnering with a third party that will take over the day to day responsibilities of running the coffee production area of the farm.

Strategic Recommendations

The Diocese should take the following steps to achieve their goal of increasing the Uru Farm's profitability and sustainability. Each step has a corresponding list of instructions and recommendations in the *Appendix* section (Example: Step 1 corresponds with Appendix 1) and financial projections and models can be found in the *Financials* section. ,

1. Partner with a third party that will take over the management of the coffee producing area of the farm. The third party will be responsible for the rehabilitation of the coffee plantation. If a partner cannot be found the farm should abandon the coffee production area until coffee prices rise or should replace the coffee trees with avocados as the cash flow allows.
 - a. The Diocese should allow its partner to construct and operate a lodge for tourists.
2. Improve the avocado production on the farm and increase the acreage dedicated to avocados as the farm's cash flow allows.
3. Produce sweet melons (Musk and Honeydew type melons), garlic, and a low cost rotational crop on limited acreage and for local consumption.

Implementation can begin on all of these steps within one year, but completion will most likely take longer. If these steps are followed the farm will become a profit center and will fulfill its mission to help the Diocese “improve economic status to the communities; achieved through supporting community income generating projects, food security and environmental protection.”

The following recommendations do not constitute legal advice. Any legal questions should be referred to a qualified and licensed legal practitioner.

Appendix 1: Coffee Farm Partnership

The Diocese has not been able to profitably improve and manage their coffee holdings at the Uru Farm. It is recommended that the Diocese find a third party to partner with on the coffee producing area of the farm. This partner should have the experience and capital required to rehabilitate the farm and turn it into a going-concern. The Diocese should take the following steps to accomplish this goal:

1. Clearly identify the area of the farm that is currently planted to coffee or that the Diocese would like to include in any partnership. This could be done initially with a simple GPS, but eventually it will most likely need to be surveyed and recorded to ensure that any long term partnership is enforceable. This will also establish the exact number of acres that are available to be partnered on.
2. A clean deed of ownership or title will need to be procured to clearly establish the right of the diocese to partner with the third party.
3. The Diocese should notify the adjacent land owners of their plans to allow them to present any claims to ground owned by the Diocese to assure that these claims can be

nullified before the partnership is established to reduce or eliminate any backend threat to the implementation of the partnership and the farm's business plan.

4. Any water rights associated with the property should be clarified and certified by the local authority. Any partner may wish to try to reestablish and rehabilitate the traditional furrows that provided irrigation to the farm. This could also benefit the farm's other activities if any water is eventually provided.
5. Identify a preferred building/home site for any future construction that the partner may need or desire to do. (This may include a lodge/hotel).
6. Identify right-of-ways required for providing access, water, power, and drainage for the building site identified in Item 5.
7. Research market rent rates for comparable farm ground in the region. This will most likely require speaking with many larger scale producers and possibly real estate agents in the area.
8. Establish an asking price and the term of the partnership. It is recommended that the Diocese ask for a yearly guaranteed sum as well as a percentage of the crop (exp. \$50 per acre per year guaranteed in addition to 10% of the crop) This will allow the Diocese to participate in any increases in the yield of the crop due to the rehabilitation and investments of the partner.
9. Determine if there is any interest in partnering with established growers in the region. To do this a representative of the Diocese should speak with coffee buyers in the Moshi area to see if they know of any existing growers that are interested in expanding their operation.

10. The Diocese should hire a real estate agent to assist them in find a partner for the property if they are unable to generate any interest on their own. They should choose an agent that can attract a domestic and international clientele.
11. The Diocese should employ an experience lawyer to assist them in the creation and execution of the partnership once a qualified and interested party has been identified.

Appendix 1.A: Coffee Farm Lodge

Moshi is a major tourist destination due to its proximity to Mt. Kilimanjaro and some of the world's greatest game parks. The Uru Farm is located in a spectacular area at the base of Mt. Kilimanjaro and just a short drive from Moshi on an improved and maintained road. The Uru Farm has electricity on site and has many possible lodge building sites.

The Kilimanjaro region has a strong tradition of coffee production and the coffee industry is already a tourist draw. Some coffee plantations already have lodges and offer tours of their operations as part of their lodge offerings. The Moshi Diocese should allow their coffee production partner to also build a tourist lodge on the property. The Diocese could negotiate a flat fee from the partner or it could participate in the financial outcome of the lodge buy negotiating a percentage of sales from the lodge. It is impossible to accurately forecast any financial outcome from this venture, but the cost to the Diocese would be negligible, and therefore any revenue earned from the venture would be a net positive.

Appendix 2: Avocado Production

Avocado production is increasing in East Africa, and especially at the base of Mt. Kilimanjaro due to its unique climate that allows it to deliver avocados to Europe when there is a shortage of supply from more traditional growers in South America and southern parts of Europe. The pioneer of this market has been Africado, which is located in the Kilimanjaro region. The Uru Farm has partnered with Africado, and Africado provides marketing and technical assistance for the 5 acres of avocados in production on the farm, and will do the same for the additional five acres which have been planted but have not reached maturation. Africado is also willing to support Uru Farm in expanding their avocado acreage.

Avocados are a viable crop for Uru farm based upon the health and growth of the trees currently in production as well as the promising outlet for sales. The price for avocados is also decent. The avocados do not appear to have been dramatically impacted by the lack of water on the farm, and the farm management team has done a good job establishing the avocados in spite of their lack of experience with the crop. Africado's assistance has been helpful.

The farm consists of 150 acres, sixty of which are planted to coffee. Of the remaining ninety acres, ten have been planted to avocado and the remainder have been farmed by people living near the farm. The Diocese should continue to expand their avocado acreage to take advantage of the land that is not currently being farmed by the Diocese. A small portion of the acres (5-10) will need to be left for vegetable and fruit production, but the rest (70-75) could eventually be planted to avocados. Avocados could also be planted where the coffee now grows if coffee production is abandoned.

Appendix 3: Fruit and Vegetable Production

Uru Farm has the proper soil and climate to raise many different fruits and vegetables but should only focus on those that have the potential to be highly profitable. The Tanzanian Horticulture Association (TAHA) markets and brokers fruits and vegetables across the country and is very aware of unmet demands and pricing opportunities. They have provided a list of fruits and vegetables that are in high demand and have high prices, allowing for farmers to earn a better return on their investment. Based on these recommendations, and taking into consideration the limiting factors on the farm, it is recommended that Uru Farm focus on producing sweet melons, garlic, and a low cost rotational crop to help with weed suppression and disease control.

TAHA has agreed to sell all of the produce from the Uru Farm, but will require that Uru Farm become a member of their association. Alleviating the need for an individual dedicated to marketing and transportation will allow farm management to focus on raising the crop. The farm should start producing these crops on a very small scale in order to reduce the financial impact of failure that is most likely to occur during the first few growing seasons. The farm should only expand the acreage dedicated to these crops as the farm management and workers become familiar with the methods and means of production. One acre each of garlic and sweet melons would be an appropriate starting point.

These crops should not be grown year after year on the same ground without rotating them. If you plant the same crop year after year you will increase weed, disease, and pest pressure. An appropriate rotation would be sweet melons, dry beans, garlic, corn, and then repeat. The farm may want to consider rotational crops that require less water such as sorghum or millet.

Appendix 3.A: Sweet Melon Production Guide

There are two basic types of sweet melons grown in Tanzania: muskmelons (orange flesh) and honeydew type melons (green and white flesh). The market demands that a supplier provide both types of melons, but not in equal proportions. The demand for honeydew melons is higher than muskmelons, and therefore the farm should produce 75% honeydew melons and 25% muskmelons. The first crop should be planted immediately before the rainy season, and then crops should be planted every few weeks after that to ensure that the farm has melons for the market on a consistent basis.

Follow these steps to produce sweet melons:

1. All ground that is to be planted should be kept weed free year round. If weeds are not present then a portion of any rain that falls will remain in the soil and will be available for the melon crop. Weeds left alive during the non-farmed portion of the year also steal nutrients and increase production costs at planting. Killing weeds year round will also reduce the reservoir of weed seed in the soil and will reduce weed pressure over time. In addition, the farm is infested with Nutsedge (Guatemala), which is much easier to kill when crops are not present.
2. Divots should be made in the bare soil to capture water and reduce runoff during the non-farmed season.
3. Speak with TAHA to determine which varieties are selling the best in the market.
4. Determine if the bestselling varieties are well suited to production on the Uru Farm based upon their drought, disease, and pest resistance.

5. If the varieties in demand are well suited then procure the seed from a reputable vendor and ensure that the seed is no more than one year old and that the germ is at least 85%. 90%+ would be much better. The seed also needs to be treated with seed treatment that will protect it from pests and disease as it is emerging from the soil.
6. Select the area that will be planted into melons and do a soil test to determine the nutrient levels in the soil. The primary nutrients that need to be addressed are Nitrogen (N), Phosphorus (P), and Potassium (K). The following levels of fertility need to be achieved by the addition of fertilizers:
 - N: 125 kgs per acre
 - P: 30 kgs per acre
 - K: 150 kgs per acre
7. Sweet melons also need to have a soil pH of between 6.0-7.0. If the pH is out of this range it will inhibit the plants ability to access nutrients in the soil resulting in poor growth and health. The pH can be amended by using Lime to increase the pH or Gypsum to reduce the pH. Gypsum should not be applied unless the pH is above 7.5 and salts are present in the soil. The company that tests the soil for the farm should be able to provide recommendations on the amount of amendments required to achieve the desired pH. Any amendment added to the soil should be applied at least three months before the targeted planting date.
8. Thoroughly work the ground four weeks prior to planting. All debris from the previous crop should be incorporated and any fertilizer or amendments applied should be worked into the ground at least six centimeters deep.

9. Construct hills twenty centimeters high and with a diameter of one meter three weeks before planting. The melon seeds will be planted into these hills to improve drainage and emergence. The hills should be in straight rows. See Diagram 1 attached.
10. Maintain the area free of weeds until it is time to plant.
11. Plant the melons into the hills. Plant three seeds in each hill in the same hole. Plant the seeds two to three centimeters deep.
12. The newly planted seeds will need to be irrigated until emergence if it does not rain shortly after planting.
13. Continue weeding the crop until harvest.
14. Consult the attached resource guide for the appropriate pesticide if pests become a problem.
15. The amount of time between planting and harvest will depend on the variety and the weather, but should be between 3-4 months. The harvest season could last for up to four weeks depending on the variety.
16. The melon vines and remaining melons should be worked into the soil or fed to animals after harvest is completed.

Appendix 3.B: Garlic Production Guide

There are two types of garlic on the market in Tanzania: Domestic Purple Hard Neck, and Imported Chinese White Soft Neck. The local market prefers the domestic variety due to its superior aroma, flavor, and color. The domestic garlic that is sold on the market is usually very small with only one round of cloves in the bulb. It also is usually lacking skins and on the verge

of falling apart. The market does not demand high quality garlic, but does prefer domestic garlic on the larger end of the size spectrum. Uru farm should only grow domestic purple garlic due to its superior demand and price.

Follow these steps to produce garlic:

1. All ground that is to be planted should be kept weed free year round. If weeds are not present then a portion of any rain that falls will remain in the soil and will be available for the garlic crop. Weeds left alive during the non-farmed portion of the year also steal nutrients and increase production costs at planting. Killing weeds year round will also reduce the reservoir of weed seed in the soil and will reduce weed pressure over time.
2. Divots should be made in the bare soil to capture water and reduce runoff during the non-farmed season.
3. Select the area that will be planted into garlic and do a soil test to determine the nutrient levels in the soil. The primary nutrients that need to be addressed are Nitrogen (N), Phosphorus (P), and Potassium (K). The following levels of fertility need to be achieved by the addition of fertilizers:
 - N: 200 kgs per acre
 - P: 50 kgs per acre
 - K: 220 kgs per acre
4. Garlic needs to have a soil pH of 6.5-7.5. If the pH is out of this range it will inhibit the plants ability to access nutrients in the soil resulting in poor growth and health. The pH can be amended by using Lime to increase the pH or Gypsum to reduce the pH. Gypsum should not be applied unless the pH is above 8 and salts are present in the soil. The

company that tests the soil for the farm should be able to provide recommendations on the amount of amendments required to achieve the desired pH. Any amendment added to the soil should be applied at least three months before the targeted planting date.

5. Thoroughly work the ground four weeks prior to planting. All debris from the previous crop should be incorporated and any fertilizer or amendments applied should be worked into the ground at least 12 centimeters deep.
6. Plant the garlic in raised beds that are 40 cm from the center of one bed to the next bed and 10 cm high (See Diagram 2). The garlic should be planted at least 10 cm deep. The beds should be laid against the contour of the ground to catch water and prevent runoff. Divots should also be made in the furrows between the beds to keep water from running off the field.
7. Keep the field free of weeds the entire growing season.
8. Monitor for pests and disease. If disease is found in the garlic dig it up and remove it from the field immediately. It is best to burn any diseased garlic to ensure the disease is not spread to other plants and fields.
9. Pesticides may be used on garlic for control of bugs and weeds. Please see the attached garlic resource guide for additional information.
10. If the garlic puts out a flower stem (See Diagram 3) called a scape go through the field and cut the scapes off. The scapes can be eaten and are best fried with other vegetables. Scapes steal energy from the plant which limits bulb growth, which is why they must be removed.
11. The garlic will be ready to harvest when there are only 4 skins left on the garlic. To harvest the garlic dig it out of the ground and let it sit on the surface of the ground until

the skins have dried. This usually takes less than one day. The garlic should not be left in the sun for more than one day because it can be sun burned and ruined. If the garlic requires additional drying it should be done in a covered building that will keep the sun and rain off of the garlic.

12. Garlic can be stored for up to four months, and even longer in some situations. The key to good storability is ensuring the garlic is dry before it is bagged and that it has not broken apart. When garlic breaks apart into individual cloves it will begin to sprout.
13. The seed for the next crop should be selected at harvest. The best and biggest garlic should be saved to plant the next crop. Never save any garlic for seed that is damaged or has any type of disease or fungus

Conclusion

The Uru farm can achieve its goal of significant profitability by finding a partner to take over the coffee production on the farm, increasing the acreage dedicated to avocado production, and growing sweet melons and garlic. If a partner cannot be found to take over the coffee portion of the farm then the farm should abandon coffee production and transition those acres into avocado production. There are other opportunities on the farm such as bee keeping, rearing animals, dairy farming, timber farming, and others, and some of these ideas have merit and potential, but they should not detract from the focus that the farm management and its team need to give to the stated objectives in order for them to be achieved.

Sweet Melon Production Resources

1. General Production Guide Sweet Melons
<http://www.aces.edu/pubs/docs/A/ANR-0974/ANR-0974.pdf>
2. General Production Guide Sweet Melons + Pesticide Guide
<http://edis.ifas.ufl.edu/cv123>
3. South African Production Guide
http://www.daff.gov.za/docs/Brochures/PG_muskmelon.pdf
4. Tanzanian Horticultural Association Website
<http://taha.or.tz/>

Garlic Production Resources

1. South African Garlic Growers Association Production Guide
http://www.sagarlic.co.za/garlic_cultivation.html
2. Garlic Pest Management
http://jhawkins54.typepad.com/files/garlic_insect_management-weinzierl.pdf
3. South African Government Production Guide
<http://www.nda.agric.za/docs/Brochures/prodGuideGarlic.pdf>
4. California Garlic Guide with Pesticide Information
<http://www.ipmcenters.org/cropprofiles/docs/CAgarlic.pdf>