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Madagascar, Factor 16: Education

Madagascar: Benefits to Educated Agriculture

Madagascar, the fourth biggest island, is located off of Africa on the south eastern coast. The people are completely isolated on the island by the surrounding Indian Ocean. Farming is one of the key ways the inhabitants produce their food, but yet that is also their weakness. Since they have been isolated from most of the world, they do not know many useful ways of farming. Women and children are suffering from the lack of food, so much so that the young have one of the highest rates of stunting in the world ("Poverty & Healthcare"). Madagascans stick to what they have been taught for generations, which has become far too outdated, when it comes to farming because no new farming practices have come to the island. Large families live in one-room houses where it is a constant struggle to put food on the table. For this reason, markets do not have much to offer because no one has any food. In addition, most families live on one dollar a day and are barely able to afford the simplest of goods. As they are starving, families notice that their once luscious forest is slowly being depleted by new farmers who will ultimately meet the same fate of hunger. Furthermore, there has been a substantial increase in population, which causes the forests to become wastelands with slash-and-burn farming being used for the fields. Hunger is similar to seasons; some seasons are worse than others. Parents, hoping to give their children better lives than what they have now, send their children to school. However, the government lacks funds for schools, which have in turn become dilapidated and overcrowded. The teachers are not qualified to teach because they traveled the same road as their students are going through now. In addition, violent weather has wrecked so much of this island; schools and fields have been destroyed and ruined. Locusts swarm the fields and damage what little the farmers have and causes some livestock to die. The environment is harsh to the rural farmers with the diverse soil and rampaging weather. Madagascar is considered a quagmire with all the factors affecting the inhabitants on the island.

In Madagascan culture, families live together even when a child gets married. The average Madagascan family consists of a father, mother, and six children. Some families, after one of their children gets married, will live with their child and spouse and occupy one to two rooms. A typical house in rural Madagascar is made up of mud bricks stacked together to make a hut ("Food & Daily Life"). Typically, families grow rice, potatoes, cassava, beans, and sweet potatoes ("Rural Poverty in Madagascar"). Traditional dishes are made, such as puddings, Koba, and curries. Koba is a dessert and a snack, consisting of ground peanuts, mashed bananas, honey, and rice wrapped in banana leaves ("Food & Daily Life"). Rice is one of the staple crops, which some families eat at least three times a day. Many times though, families are not able to grow enough food to live off of, which leads to malnourishment and sickness. Since two thirds of the Madagascan population lives below the poverty line, many families do not have the income to afford superb healthcare and children are often left with unskilled doctors ("Poverty & Healthcare"). If a child were to get sick, he or she could travel to the nearest local hospital; however, many rural families' travels to the doctor can range up to ten miles. Basic healthcare is free to everyone, but patients have to pay for food, bed linings, and hospital gowns. Sometimes that is too far for families to travel, and they will go to the local healer to receive herbs instead. Madagascan healthcare is regulated by the government, and since the government is low on money, they stop funding the hospitals. With lacking funds this leaves the local hospitals with shortage of staff, no specialized surgeons, and lack of medical supplies. They cannot get many doctors because of not many students are getting through school. If a hundred students enter first grade, only sixty will complete primary school. Furthermore, they have high rates of repeating grades among the students. In 2008, only seven percent of pre-k eligible students were attending school. The few students actually enrolled in school learn in dilapidated classrooms, with limited learning materials. If families are not able to send their children to school, they

will hire teachers or tutors. These teachers and tutors have little to no training in teaching ("Education"). In the few areas where students are able to go to school, they are turned away because of being overcrowded or of lack of money to pay teachers. Most of the time, parents need the children to help raise food on the farm.

A typical rural family has about 1.3 hectares of land to grow their crops. Some of the crops grown are cassava, beans, sweet potatoes, potatoes, rice, and maize ("Rural Poverty in Madagascar"). Most families are not able to grow enough food that they need to survive and many go without food. It is in their culture to use Tavy, a slash-and-burn farming technique. This entails cutting down a portion of forest and burning what is left to bring more nutrients to the soil. After this process, they plant seeds and use the rainfall to water the land. Once harvest is over, the family will move to a new part of the forest and repeat the process; after twenty years, they will go back to where they started and begin the cycle again (Kremen).

Madagascan families have only known Tavy as their source of farming. With the drastic increase in population, the forest is getting destroyed and families have to use the same fields over again because of lack of available land. With dwindling amount of trees for protection against the weather, the soil is eroding and easily blowing away. In addition to the weather, the increased use of the same fields has made the soil become desolate and the land is turned into a wasteland where nothing can grow (Kremen). Without enough crops to feed the family, they cannot go to the market to sell food. This leads the families to keep farming and to produce food instead of getting a job. If they were to get money to buy food, all the other farmers at the market would not have enough food to sell to the family ("Rural Poverty in Madagascar"). The food market is almost non-existent due to the lack of farmers who supply food because they simply cannot afford to. In addition to not having much food provided in the markets, many families are too poor to afford any meat, fish, vegetables, or fruits ("Poverty & Healthcare"). Because of this, children especially are becoming malnourished. The island is racked with extreme weather that severely hurts the crops and therefore the money earned by the farmers. The farmers have to face droughts, cyclones, and flooding that they cannot afford when they need the crops to make a living ("Extreme Vulnerability of Smallholder Farmers to Agricultural Risks and Climate Change in Madagascar"). Locust is another area of weakness for the farmers. There is a massive population of locust with the ability to destroy the employment of thirteen million people. Out of those people, nine million are farmers that earn their money from raising crops. Every year, the locust reproduce at a rapid rate and eat and destroy the crops that the farmers grow ("Madagascar Locust Crisis"). Consequently, families are left to go hungry with the lack of food and they cannot go to the market to sell food they do not have.

Families not educated in modern or more useful ways of farming are left in the same problem they have been in for years. The families cannot produce enough food because the fields have been exhausted of nutrients (Kremen). Since they do not know any other way to grow crops, they cannot grow the crops that they need to live. Additionally, by not having food to eat alone, they cannot go to the market to sell food to get money. Overall, there is not enough food for the children, and they are facing malnourishment and stunting ("Poverty & Healthcare"). Agricultural education is almost obsolete, the soil is being degraded to nothing, and they are losing their forests because people need the land to grow crops and to try to replenish the soil. While the trees are not able to grow back on the land, the soil is blowing away in the wind and easily eroding with rain and nearby streams, causing the water to become polluted; this, in turn, kills the fish in the streams and consequently any fishing that the family does, is no longer available ("Country Profile – Madagascar"). The rural families are most affected by the lack of knowledge, because it results in a chain of events. When farmer families cannot produce enough food for their families, they will not go to the markets to sell food. By not going to the markets to sell food, the urban families do not have much food to buy, leading their families to go hungry. In rural families the children and women are facing the full force of lack of food ("Four Million Food Insecure in Madagascar"). This leads to decreased productivity from these groups of people when it comes to helping grow crops.

In recent years, there has not been much change in the use in Tavy. Since it is very much a part of Madagascan culture, families have a hard time switching away from it to a more productive method of farming. The small farmers especially have a hard time switching away from Tavy because it is all they have ever known. Very few have switched to a more productive method in hopes of a surplus; others simply do not know any other ways. One of the ways to own land is to clear space and claim it as your own; many families claim land and then clear the forest with Tavy to use as farmland. Another way to claim land is to farm perennial crops, coffee or cloves, which gives farmers more of a permanent land rights. Farmers use Tavy as their way of claiming land because a huge population boom has increased the need for land. Due to many giant corporations that raise perennial crops as their business, many farmers are forced to clear more forests and gain land through the use of Tavy. Normally, the land that they have will eventually be given to their children, as to make sure that they will have some land in the future; however, these corporations get the land privatized, and the rural farmers will never be able to keep the land or pass it down to their children. There are no laws that protect these farmers from having their land taken away by these businesses. The government is concerned with the amount of forest that is being cut; however, they do not give incentives the farmers who use Tavy to find a less damaging method of farming (Oxby). There has been slight increase in the use of Tavy due to an increase in population leading to more land being needed. The situation has become worse because farmers are in the need of land and food, so they cut down the forest to gain land and use Tavy as a way to farm for their family; however, this still leaves them with shortages in food.

By improving the knowledge of farmers, crop yields can improve greatly. With better knowledge on how to farm effectively, families can grow more food. This will lead to farmers going to the markets to sell their crops because of their surplus amounts. With better, newer practices, the environment will be in a much better condition. Moving away from Tavy to different forms of farming will save the forests and the weather will not erode the soil that has become desolate. The soil will become fertilized so the land will not become a wasteland where nothing can grow. With the amount of food crops that are grown, farmers will be able to go to the market, which leads to food availability for urban families. This will bring cash flow to the farming families so they can buy products that they need, stimulating more business exchanges in the area. With all the cash flowing through the economy, poverty will be reduced across country. By improving their agriculture, everybody will benefit from the increase of food. Child rates of stunting will decrease, leading them to be more productive in the fields and live fuller, healthier lives. Small farmers would also benefit from an increase of yields; they would be able to produce more food for their families, as well as going to the market to sell the crops they have. Urban families who shop in the local markets would benefit as well because there would be an increase in food that the farmers have, which leads to more food in the markets.

As Madagascan farmers will greatly benefit from learning a few ways of agriculture, there will still be a few problems along the way. Madagascar has violent weather; the island experiences cyclones, droughts, and flooding (“Extreme Vulnerability”). This, in turn, destroys the growing crops and ruins the land. Droughts occur in the southern regions where the crops and cattle alike die from lack of water. This, as well, will cause the soil to lose nutrients and become hostile to grow crops. Droughts flood the farm land and wash away any plants and crops that would be growing. Cyclones knock down any crops and ruin most chances of pollination (“Country Profile – Madagascar”). Weather is hard for the farmers to handle because of its unpredictability. Consequently, with an increase of food crops being grown, locusts will have more food to eat and be able to reproduce more. Farmers will have to try to plan with this in mind until the locust population could be controlled. While it is currently in the process of being dealt with, there will be a few problems among the farmers on how to effectively and safely reduce the population of the swarming locust. Currently the Food and Agriculture Organization is trying to fund an initiative to help combat the current plague. Their plan is to combat the locust with aerial sprayed pesticides to help contain the mass population. This would help to save money in the future when the current situation becomes out of hand, and money is needed to help restore the land and crops (“Madagascar Locust

Crisis"). Lastly, since Tavy is very much a part of Madagascan farming culture, some farmers will not want to change their ways and adapt to a new way of farming. It might take a few generations of farmers until everybody will or be willing to use more productive methods. Adding on to that, some farmers just will not want to take advice on how to better farm their crops.

The Aga Khan Foundation started Participative Learning Action Research (PLAR), which has helped farmers receive higher yields. PLAR is currently working in Western Africa, and the people are showing great strides towards food security. They have learned different ways to grow crops and passed their education down to their children. The Aga Khan Foundation has helped other countries across the world with food security just by providing the inhabitants with new resources to try out different ways of farming. They have shown results in everywhere they have gone and helped others; they would be great to help the rural farmers in Madagascar grow more food.

PLAR is essentially a toolbox for farmers; it includes various seeds and fertilizers, as well as education on mapping, planning, water management and field preparation. The few farmers who have participated in this have greatly increased their yields. "Yields have grown from 1.5 tonnes per hectare to 5 tonnes per hectare without chemical fertilizers" ("Rural Development in Madagascar"). With this, farmers have been able to support their families through the seasons of hunger. PLAR is centered on the people and develops around what farmers use now, rather than introducing advanced technology that the farmers have never used before. It also teaches the farmers about the rice plant, transplanting, soil fertilizing, watering, and pest management. Even after the farmer is done growing the crops, it helps to guide the family into the market in selling and negotiation skills, as well as different storage techniques for crops ("Rural Development in Madagascar").

PLAR starts with around twenty-five to thirty-five farmers who share a common water source. They are then given a toolbox full of resources and told to experiment on a ten-square meter plot of land. As to not put the families' food at risk, it is important that the farmer uses only ten-square meters of land. If a new way of farming were to not work, the farmer would not have to worry about not having a significant decrease in food. The farmers learn about different practices that could be used and gain an understanding of basic, yet key principles to farming successfully. Some farmers start with planting in rows and using natural fertilizers to help with the rice. As farmers raise their crops, others farmers are able to watch and use any new techniques that the other farmers are using. One objective with PLAR is to encourage farmers to communicate with others and compare results. This way, everybody is receiving the knowledge on how to better grow crops and bring success for more people. After the harvest is done, the community comes together to discuss the different methods used in the growing of the crops to try to find the best method. This continues, and the families keep experimenting, trying to find the best method for their area. Neighboring villages are also allowed to observe and discuss what can work or what could not work. Although PLAR has more of a rice-growing focus, it can be used to experiment with growing different crops. This can lead to families gaining more diversity in the nutrients they are eating. When the families are ready to go to the market, they have materials to learn from on how to best sell their products, increasing monetary intake. This will lead to more crops to be available in the market and making it easier to gain food if a crop for a farmer were not to turn out as well as they planned. They would also be able to store more of the food as they learn about different storage techniques ("Rural Development in Madagascar"). This in turn, allows the families to store food longer and keep the crops available for later use, which was not easily kept for that long before. If the people where to want to stick to the ways of Tavy, they could learn how to better plant the seeds and care for the fields so as to when they come back the land is in better condition and will not turn into a wasteland.

International research agencies and non-governmental workers should help to try to find the best methods. As more people experiment with the different ways to farm the land, the more productive the farmers can

be. International research agencies will be beneficial because they notice ways to help the yields that farmers might miss plus they would be able to test soil and recommend ways to the farmers that could be more benifical. The non-governmental workers will be able help grow crops adding to the amount of people experimenting, increasing the research being done. The more people willing to help with experimenting with different methods, the more likely farming families will be productive. Rural farmers are the most important piece to this plan. Without them, no one is learning the best growing methods of the crops or growing the crops for people to eat. Once a better way of growing crops is established, it is the rural families' jobs to teach their children about the new ways of farming. This will cause each generation to becom more productive farmers. The plan is for the rural families to learn different ways of farming and how to make the most out of what they are given.

Educated farmers will have the power to help everyone on the island of Madagascar. With new knowledge, the farmers can protect the forests they have been destroying for years, bringing back nutrients to the soil that has been exhausted. Farmers could even teach their relatives about the new ways of growing crops and change the farming culture of Tavy; instead, the culture will change to one of productivity and care, rather than one of hunger and destruction. The new abundance of food will help the children so they would not experience stunting and malnourishment. Women will live healthy lives with their families. Children will not have to repeat grades in school, which will allow for more potential students to go to school. The markets will be flooded with the surplus of goods and products to be sold. Rural families will be able to live off of more than a dollar a day as they sell their crops. Poverty will slowly decrease, and urban families will be able to buy food that was not always available to them. Though the experimenting will take a couple of harvests to find methods to produce higher yields, it will be beneficial for everyone. It will take a group effort, but it can be done to give food to those who have gone hungry for so much of their lives. Many lives would be forever changed with more food being grown and put into the markets. The hunger seasons would be replaced with seasons of bounty. Some seasons would be more bountiful than others, but the bounty would nonetheless be thanks to educated farming. Through education of productive farming, hunger in Madagascar can be stopped. With the help of rural farmers, non-governmental workers, and international research agencies to find the best method of growing food, ending hunger as we know it in this isolated island is possible. The new knowledge will allow Madagascans to prosper and more away from the ways the past, leaving everyone with a full belly.

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