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## **Malawi: Educating Farmers on Using New Agricultural Techniques to Improve Crop Production**

### **Introduction**

Malawi is a tropical country in Sub-Saharan Africa with diverse natural vegetation covering about 118,500 square kilometers (approx. 45,753.1 square miles or about the size of Pennsylvania), with a population of 13 million. Formerly named Nyasaland, Malawi was a British colony until Dr. Hastings Kamuzu Banda led it to its freedom on July 6, 1964. Today Malawi has a multi-party democratic political system. After Malawi's independence in 1964 there was uneven economic growth. What is termed the "lost decade" is the period from 1994 to 2004, when there was relatively no economic change. However, from 2004 forward one can see economic progress and growth thanks in part to a subsidy program that has shown its effectiveness.

The rainy season in Malawi lasts from December to April, when 95% of the annual precipitation occurs. May to August is known as the cool and dry season, when frost may occur in isolated areas during June and July. Lake Malawi covers nearly one-fifth of its land as the 3rd largest freshwater lake in Africa and the 11th largest in the world. Mount Mulanje in Malawi is the highest point in central Africa at 3,000 meters (approx. 9,824.5 feet). While these natural monuments play a central role in Malawi's scenery, they prove to be an impediment to the Malawian farmers. The limited land space in Malawi is cut into even smaller portions for farmers to cultivate crops because of the size of these geographic landmarks. In Malawi, agriculture contributes 35% to the gross domestic product; so if Malawi is to progress economically, smallholders must be educated on skills and techniques to improve crop production.

### **Millennium Developmental Goals**

The United Nation's Millennium Declaration in 2000 was a set of eight goals that, if achieved, would improve millions of lives around the world. The eight Millennium Development Goals (MDGs), which aim to be met by 2015, are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

The MDGs are based on basic human needs, rights that "every individual around the world should be able to enjoy" (*The Millennium Development Goals Report 2010* Sec 2:3).

Progress is carefully tracked, and in 2010 world leaders met once again to review the progress of countries in relation to the MDGs. The report from the 2010 gathering showed not only progression, but also that the MDGs are achievable. This report also showed, however, that in some countries progress is slow and crises are hindering the progress of some nations. A very important part of the Millennium Development Goals Report in 2010 is that the Goals—with careful strategy and international support with policies, programs, and research—can be met by even the poorest of countries.

## **Global Hunger Index**

The Global Hunger Index (GHI), developed by the International Food Policy Research Institute (IFPRI), is a tool used to better measure and track global hunger. The GHI uses a 100-point scale to rank a country's hunger, where 100 is the worst and 0 is the best. Realistically, though, neither end of the spectrum is ever reached. Values less than 5.0 show low hunger rates, 5.0-9.9 show moderate hunger levels, 10.0-19.9 show serious problems with hunger, 20.0-29.9 show alarming levels, and anything higher than 29.9 show extremely alarming hunger levels. The GHI takes into account 3 different indicators: 1) The proportion of undernourished within a population, 2) The amount of children under five years old that are underweight, and 3) the child mortality rate of children under five years old.

It is important to note the meaning of certain terms in the context of the GHI. Undernutrition is measured by deficiencies in energy, protein, and/or essential vitamins and minerals. Undernutrition should not be confused with "malnutrition", which is a broader term that envelops the concepts of both undernutrition and overnutrition. Overnutrition refers to unbalanced diets where too many calories are consumed in relation to intake of micronutrient-rich foods.

Malawi's overall GHI has decreased from 30.6 in 1990 to 18.2 in 2010. What makes Malawi's decrease in GHI even more impressive is that, as a region, Sub-Saharan Africa's GHI was 25.3 in 1990, which then was lowered to 21.7 by 2010. This means that, even though Malawi was 5.3 points above the Sub-Saharan GHI, the country was able to institute programs that lowered its GHI 3.5 points below that of Sub-Saharan Africa in 2010. However, even though Malawi is making progress, this country is still in the "serious" category regarding the severity of hunger, as of 2010.

## **The Malawian Family Farm**

Many families in Malawi live in rural areas and are subsistence farmers. As subsistence farmers, the people in Malawi grow what they can to survive and generally live on less than US\$1. Those families lucky enough to own larger areas of land may be able to produce a surplus to export and increase their income. Malawi must import a large proportion of their grains, such as maize and wheat, due to remaining areas still vulnerable to food security. The average family consists of 5 persons, and the average land per family is 1.5 hectares (approx. 3.7 acres), which has decreased by half over the past 50 years. Only 34% of the 11.78 million hectares (29.1 million acres) is cultivable.

The major food crops include: maize, rice, cassava sorghum, pulses, and groundnuts. Sorghum is the world's fifth most important cereal crop; pulses are a type of legume where seeds are grown within a pod, such as garbanzo beans, lentils, or peas. Maize is the main crop produced in Malawi; about 97% of the farmers grow this grain, with over half of the families growing nothing but maize. Cash crops in Malawi are tobacco, wheat, and cotton. Malawi's economy is highly agriculturally based, with 85% of the population relying on agriculture for their source of income, and most of them as subsistence farmers. Major exports include tobacco, tea, sugar, cotton, and coffee. Malawi, among the ten poorest nations in the world, depends on its exports, and tobacco accounts for over half of its export revenue.

Two types of farm families in Malawi can be found: matriarchal- and patriarchal-led households. In the matriarchal-led households, the number of economically active family members was fewer and females were less able to delegate labor to working family members on the farm than in a patriarchal-led farming household. Also, the size of patriarchal-led family farms showed an increase in size and production of crops. On both types of farms, though, family labor is more commonly found than hired labor.

## **Discussion on Education and Training**

One of the most apparent problems in smallholder farming is basic knowledge of improving crop production. This involves water management, fertilization, and raising livestock. Most of the farming is done between November and March, the rainy season. The rainfall, though, comes in quick bursts and then can disappear for extended periods of time. The rainfall is not consistent enough for farmers to use their land to its full capacity because they are dealing with droughts and flooding. With the lack of knowledge on how to deal with severe droughts and flooding, for example, farmers are reliant upon erratic rainfall for their crop production. This perpetuates inconsistencies in crop production, resulting in unreliable income and nutrition. Without a steady crop production, farmers don't know how much they will be able to sell, how much food they will be able to provide for their families, or even when the crops will be ready for harvesting.

Trends show that, with both government and non-government aid, Malawi is improving crop production. The Food and Agriculture Organization (FAO) is working with Malawi's government to supply good quality seed, fertilizer and pesticides to smallholders. This has increased crop production, as seen in 2008 when Malawi produced a surplus of maize for the third year in a row. Furthermore, in 2008 Malawi exported maize to Zimbabwe, Lesotho, and Swaziland, while also providing supplies for food aid within its own borders.

One primary obstacle in increasing productivity in Malawi is that the country is a signatory of the 1973 and 1999 International Labor Organization (ILO) Convention, meaning that they are involved in the global effort to stamp out the worst forms of child labor by 2016. The reason this is an obstacle is that, while education is viewed as important to Malawian people, there is a great need to pull in more money that could be used for much-needed food for the family. Sending a child to school is not a necessity, whereas feeding the family is. Crop production increases should not be made at the expense of children's education. In short, the benefits of sending Malawian children to school must outweigh the profit of allowing school-age children to work to increase the family income.

## **Effects of Water Scarcity, Population Growth, and Urbanization**

Malawi's agriculture relies heavily on crops where rain is a key factor to overall production. The average amount of rainfall per year, 850 mm (approx. 33.5 inches), should be enough for the crops to grow. Unfortunately, the rain patterns in Malawi are erratic, so droughts and flooding are serious problems for smallholders. Because of erratic rainfall, Malawi experiences water scarcity due to lack of proper water management systems. With only 20% of Malawi farmland under water management, and only 10% using irrigation, Malawi faces serious problems it must overcome in order to successfully improve crop yield.

Malawi's population is so dense that a family farm will plant and harvest on the same ground for generations, never able to move to new, unused, and therefore nutrient-rich soil. This means the ground that people try to farm is depleted of nutrients due to a lack of fertilizers, crop rotation and overuse. Farmland is in high demand in Malawi. With such a small amount of farmable land, smallholders must use their farmland year after year, but don't have the proper techniques to replenish the nutrients in the soil needed for crop production. With population growth, this problem becomes exponentially worse because what little fertile land there was before must be shared with and now provide for even more people.

The Malawi families residing in urban areas fare much better than those in rural areas. Compared to the 14% of the population in urban areas of Malawi living in poverty, the 43% in poverty in rural areas is an extremely steep incline. Previous efforts to reduce poverty in Malawi have been more effective in urban

rather than rural areas. Because rural farmers rely on their crops to provide their income and food source, they are less likely to have food security than in an urban area. If farmers are not trained in proper techniques to improve crop production, rural areas in Malawi will continue to experience higher levels of poverty. While families in urban areas can rely on other sources of income to provide for their families, rural smallholders have only their farms on which to survive. Without an effective and consistent method to produce crops, these families often do not receive the proper nutrition or yield a surplus with which to generate a source of income.

## **Recommendations, Suggestions, and Conclusion**

*Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.*  
Chinese Proverb

Unless proper water management techniques, such as storage and irrigation, are effectively developed and implemented, crop production will continue to rely on unpredictable weather patterns. If water management is put into effect, and the smallholders are taught how to utilize such management techniques, then crop production will be more consistent. Furthermore, if these techniques are used correctly, then the crop season can even be extended to include multiple harvestings, instead of just one per year. One such technique is already being put into place. The first step taught to the farmers is to make ridges of the past years field and work the old residue into the soil. Then a farmer goes in the opposite direction of the field to make box ridges so that water stays and sinks into the earth.

Another important aspect of yielding crops is fertilization. As described earlier, the soil is often overused and deprived of nutrients. If livestock such as goats, cattle, or chickens are given to villages and then bred, families will be provided with a source of nourishment from the animal byproducts, like milk and eggs, and the manure can be used for field fertilization. Another way to fertilize the fields would be to not weed the field before planting, but instead use an herbicide to kill the weeds and then turn the soil and use the decomposed weeds to fertilize the fields. The same can be done after harvest with the stalks and roots of crops.

In order for children to be kept out of the fields, which is yet another obstacle to overcome, short and long term incentives should be put into effect so adults will see that sending their child to school is more rewarding and outweighs any practical benefit of having children work as farm hands. Implementing a school lunch program would achieve higher enrollment levels and keep more children out of the fields. If farm families know that they will be fed, then that is one less mouth for the parents to feed. Children will be better nourished because there will be a consistent meal provided for them, and they will be more likely to continue with their education. Child mortality rates due to undernourishment will decrease, and overall the Malawians will see the benefits of eliminating child labor.

If these programs are to be properly implemented, the government must be strong enough to coordinate the education of such techniques across the country. The government should act as a stable provider of materials and information regarding new techniques. In other countries like Malawi that are working towards the MDGs and have extremely productive in eradicating hunger attribute their successes to both government and non-government installations targeting women and young children. Malawi has begun taking similar measures, which is surely one of the more powerful ways to bring about change in the food security problem of Malawi. For example, the FAO aids the government through a US\$500,000 Technical Cooperation Project. This program provides families that are vulnerable to food scarcity with maize and vegetable seed as well as cassava cuttings. This gives families a start in procuring for themselves valuable nutrients for their families that they would have otherwise gone without.

Another helpful project the FAO coordinates with the Malawian government and the Nutrition Rehabilitation Unit of Lukini Hospital in Lilongwe, Malawi, provides adults receiving medical aid from the Rehabilitation Unit with training in improved horticulture practices, including composite manure production methods and cooking demonstrations that encouraged more diverse diets. This project has reached 16,800 plus households to date, and re-admission rates to the Nutritional Rehabilitation Unit dropped from 34% to 6%. The best part about this project, though, is that once taught how to improve nutrition and crop production, families shared their knowledge with others in their community. As a whole, the towns where better horticulture practices are taught fare better because they are better equipped to deal with undernourishment and nutrition-deprived planting grounds. What's more is that these lessons can be passed on to succeeding generations, which brings countries close to all of the MDGs and to lowering its GHI.

In order for Malawi to decrease the families that are vulnerable to food insecurity, the government of Malawi must make education of farmers a top priority. They must become involved in all the processes of training smallholders how to secure the highest crop yield possible. Because of Malawi's dependence on agriculture for its economy, if the harvests improve for Malawi, then the GNI of the country will increase. If the GNI of Malawi increases, then more monetary resources can be put towards aiding those still at risk of food scarcity. Malawi's GHI has already decreased dramatically. With more government aid, the current GHI of Malawi is bound to drop. The more the government empowers the smallholders of Malawi, the more positive change the country will see.

In order to eradicate poverty in Malawi, or any impoverished nation for that matter, teaching the people how to use successful methods to raise overall crop production with the resources they have available must be a top priority. The Millennium Development Goals set out to improve eight different areas that contribute to global poverty around the world. Goal 1 is not a simple task by any means, but if an interest is taken in procedures for their environment, then not only will extreme poverty and hunger be eradicated for one generation, but for all of the generations that follow.

## Works Cited

- "Pulses." Dictionary.com Unabridged. Random House, Inc. 19 Sep. 2011. <Dictionary.com <http://dictionary.reference.com/browse/Pulses>>.
- "Agenda 21 - Malawi - Natural Resource Aspects." *Welcome to the United Nations: It's Your World*. United Nations, Apr. 1997. Web. 04 Sept. 2011. <<http://www.un.org/esa/agenda21/natinfo/countr/malawi/natur.htm>>.
- "The Global Hunger Index." *International Food Policy Research Institute (IFPRI)*. Ed. Klaus Von Grebmer, Marie T. Ruel, Punima Menon, Bella Nestorova, Tolulope Olofinbiyi, Heidi Fritschel, Yisehac Yohannes, Constanze Von Oppeln, Olive Towey, Kate Golden, and Jennifer Thompson. International Food Policy Research Institute, Oct. 2010. Web. 04 Sept. 2011. <<http://www.ifpri.org/>>.
- Malawi. Ministry of Information and Civic Education. Department of Information Systems and Technology Management Services. *Malawi Government*. 2011. Web. 04 Sept. 2011. <<http://www.malawi.gov.mw/>>.
- The Millennium Development Goals Report*. Rep. New York: United Nations, 2010. *The Millennium Development Goals: Report 2010*. United Nations, 15 June 2010. Web. 04 Sept. 2011. <<http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf#page=18>>.
- "Sorghum." *U.S. Grains Council Latest News*. U.S. Grains Council, 2010. Web. 04 Sept. 2011. <<http://www.grains.org/sorghum>>.
- Takane, Tsutomu. "Labor Use in Smallholder Agriculture in Malawi: Six Village Case Studies." Thesis. Tokyo University of Agriculture, 2008. Dec. 2008. Web. 04 Sept. 2011.
- "Ubuntu in Malawi." *Fair Trade Products | Fair Trade Goods | Ubuntu Cola*. The Ubuntu Trading Company Ltd, 2011. Web. 04 Sept. 2011. <<http://www.ubuntu-trading.com/we-are-ubuntu/ubuntu-in-malawi>>.
- Vandermoortele, Milo, and Kate Bird. *Malawi's Story: Improved Economic Conditions in Malawi: Progress From a Low Base*. Rep. London: Overseas Development Institute, 2011. *Malawi's Story: Improved Economic Conditions in Malawi: Progress From a Low Base*. Overseas Development Institute, 2011. Web. 04 Sept. 2011.
- Welcome to the United Nations: It's Your World*. United Nations, 2011. Web. 04 Sept. 2011. <<http://www.un.org/millenniumgoals>>.