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Improving the Yields of the Central African Republic's Farms, and the Affects of Biofuels Production on the Poor People of the World

Today there are super countries that dominate markets and have the technologies that have created the Internet for information, MP3s for entertainment, and all the luxuries their people could want. They have thousands of options for food, and most of that food is full of sugar and processed grains that remove all nutrient value. While these super countries use their food supply to create foods that taste good or are for fine dining, other countries in the world are starving of have a shortage of quality food with the vitamins, minerals, and energy the people need to survive. According to Dr. Pedro Sanchez, "Ninety-two percent of the 815 million hungry people do not starve to death. They die of malnutrition-related diseases, not famines and wars". If the quality and variety of the foods available in these places were increased, the threat of malnutrition would be alleviated from these countries.

When the Green Revolution came about in the 1950s, it helped mostly Asia and Latin America, increasing the food produced and educating the farmers in better agricultural practices. Food production has increased dramatically; nevertheless, there are still millions of people going hungry all over the world, mostly in Asia and Africa. Sub-Saharan Africa contains sixteen of the eighteen most undernourished countries in the world. While food and money are continuously being sent to Africa to help the poor and hungry, African farmers are producing less and less food each year. If the farmers are not taught how to produce food for themselves, the problem will continue to be a part of our world in upcoming years. Small farmers or subsistence farmers produce most of the food produced in Africa. They do not receive the resources and technologies that other parts of the world receive, they grow crops without fertilizers or genetically modified seed. Many parts of the continent do not have access to water for irrigation, and depend on nature for rain and sunshine. When nature is not agreeable, farmers suffer losses due to drought, insects, and disease. (Africa's Turn)

The Central African Republic is right in the center of Africa. There are over four million people that live in the Central African Republic, and forty-three percent of them are undernourished. Sixty-six percent live with under a dollar a day. (UNDP) Seventy-five percent of the population works in agriculture, and over fifty percent of the Gross Domestic Product is produced through agriculture. The country is economically unstable due to political unrest and armed bandits that plague villages. Refugees from other countries live in the Central African Republic, while tens of thousands of the country's own people have been forced to leave their homes because of robbers and fighting. This climate of instability has hindered improvements with food security and health. (United States) AIDS is a national epidemic, with ten percent of the population living with HIV. The life expectancy rate is very low, with an average of about forty years for men and women. This is severely influence by the prevalence of people with AIDS and children born with HIV. Three in ten children die before they reach the age of five. One thousand one hundred women die in childbirth for every one hundred thousand live births. (Central African Republic) Even with the high rates of death in the country, it is still growing each year due to the many births that occur.

There are many different ethnicities living in the Central African Republic. Indigenous groups have been there for years, and there has been immigration. The largest group is the Baya, or Gbaya, with thirty-three percent of the population. Fifty-five percent of the population lives in rural areas, where they

are organized into villages of varying size. The dwellings are made of sun-dried bricks and thatch roofs. The floors are usually just dirt, and a latrine can be nonexistent. Families spend most of their time outside. There is little secrecy in the villages. In fact, concealment of acts or objects violates cultural ethics. (Samarin) A small farmer has an average of one hectare of land, or one average city block, to work to grow crops. Women farm many farms, and these women are mostly the heads of single-parent homes. Children work with their parents on the farms, attending school sometimes for a few hours. The Central African Republic's government only requires six years of schooling, with about seventy-five percent of the children actually attending school. Males usually attend school further on the females, because females are expected to marry and produce children. The literacy rate for females is thirty-three percent, about half of the male literacy rate. However, even though males spend a longer time in school than girls for the most part, not many go on the tertiary school due to lack of money. The poorest ten percent of the population receive only .7 percent of the national income, while the richest ten percent receive forty-seven percent of the national income. (United States)

The crops grown in the Central African Republic are cassava, yams, millet, corn, and bananas. These are grown for food purposes. Farmers also grow a few cash crops, like cotton, coffee, and tobacco. There are also different livestock that are raised for food and products. Crops are usually planted in May, when the wet season begins. This gives the plants the best chance of surviving where there is no irrigation available to the farmers. Farmers burn the pasturelands every year to promote re-growth of grass for cattle. Fires are also lit to prepare agricultural fields. (Eva) Once a crop is grown, most of the food stays with the family that planted it, but if there is a surplus, it is sold for a profit. Marketing is difficult for the small farmer because of transportation difficulties and storage problems. Roads and warehouses are in short supply throughout the country.

The most prevalent agricultural problem is the continuing insecurity in the Central African Republic. The government was reformed in 2003 and is still adjusting. Militia groups and criminals attack villages, forcing the people to leave their farms. The groups also destroy the livestock and burn the fields, preventing the farmers from producing any goods for that year. There is a lack of agricultural research services, and some of those stations have been destroyed. For farmers that still have their land, there is a shortage of hand tools to use to farm. All of these things need to be worked on and fixed before farmers can begin producing more and receiving a larger profit. (United Nations)

Scientific research into the major crops of sub-Saharan Africa has been pretty successful at improving the yield potentials, preventing disease and increasing the drought resistance of the cereal crops. However, most of the research has focused on other countries, and the Central African Republic does not have many stations of its own to provide specific research on crops that will work the best for the country. In addition, poor farmers do not have access to the improved crop, or do not want to spend the money on the improved crop. The fact that there is an improved crop does not help the farmers who do not use them, and can even hurt them by making it more difficult to sell the general produce that they grow when buyers want the new harvest.

Sub-Saharan Africa's current seeds produce on average one ton per hectare farmed. The rest of the world's average is three tons per hectare. This puts African countries behind the rest of the world when they attempt to sell on the market. Farmers rarely produce enough to feed their families, let alone enough to compete with the large farming enterprises. They make use of fertilizers, where they can obtain them or afford them, to try to increase their yields, adding chemicals to the environment. Pesticides and herbicides discourage common pests and weeds, but they also are detrimental to the environment. The

Central African Republic's farmer's tendency towards using the slash-and-burn technique in agriculture depletes the land of its minerals and nutrients, requiring the farmers to either use different land after a few years or continue to increase the amounts of fertilizer used to maintain a higher yield. There are techniques that the farmers could use to lower the effects of the soil depletion, but it will be a problem as long as difficult crops like maize are grown. (Fleshman)

Even though at least half of the farmers in the Central African Republic are women, they can be left out when seeds, fertilizers, and tools are given to help with production. Focuses are made on helping the larger farms to increase their yields, while it is the smaller farmers that require the most help. To truly improve the livelihood of the poor and hungry, all farmers, including women, should be offered the opportunity to use new technologies and farming techniques. Providing education for rural women is especially important in bringing the Central African Republic into the world market for food production and providing the local people with enough food to survive and flourish.

Presently, the production of the main crop of the Central African Republic, cassava, is becoming lower and lower. Rice has been replacing it as a source of protein and a higher yielding crop. WARDA developed NERICA in the mid-1990s to be better than cassava and both of the varieties of rice grown in Africa at the time. African rice had been grown for thousands of years, and was developed to handle the drought and diseases common to Africa. Asian rice was transported to Africa to give higher yields, but it was not accustomed to the drought and diseases of Africa. NERICA is a hybrid of the two varieties, and pinnacle of science that has combined the best of both of the species. It is resistant to drought and many diseases; it has high yields, and has a shorter growing season than many other types of rice. In addition to these impressive feats, NERICA's rice grains average more protein per grain than the average rice grain, being better for the food needs of the people, and the shorter growing season increases the attendance at schools, allowing children more time to be at school. (African Rice Center) The Rockefeller foundation has also been working on the improvement of many types of crops: maize, cassava, rice, and bananas. The growing season of maize has been reduced from one hundred twenty days to seventy-five to eighty days. (Biotechnology) These milestones are great for the farmers of Africa, but attention must be made to make sure that no farmer is left behind.

Farmers are incredibly impressed with NERICA's attributes, and many more are beginning to grow rice instead of the crop they were growing before. Rice production has been increasing by four percent since 1985, twice as much as maize and sorghum. (African Rice Center) This increasing switchover could have disastrous consequences as more farms grow rice and less grow supplementary crops, dropping the price of the rice and raising the price of maize and the other main cereal crops. Then all of the farmers who grow rice will miss the money that they thought that they would make. However, using genetically modified crops is beneficial to the environment in that disease and pest resistant crops require less fertilizer, pesticides, and herbicides.

Using genetically modified crops does not directly benefit the women farmers, but whenever the country has less hunger from an increase in crop production, it helps everyone. If the women do not have access to the new varieties, they will lose out on the profits of selling surplus crops, which is not at all good for them. The governments need to realize the importance of the female farmers in their economies and agriculture productions.

Biofuels production is not a major component of the agricultural process in the Central African Republic. These people are trying to make a living and come out with enough food to feed their families. As scientists are researching different crop make-ups to increase the yields for biofuels production, the

small farmers will benefit from using those crops, even if they do not sell them for biofuels use. It will only help those farmers who grow the crops that can be used for biofuels production; so many farmers will begin using those types of crops to participate in the advances and profits of those crops. However, the biofuels production using maize will not help cattle farmers. The increase in the price of maize will make the livestock farmers pay more money to feed their animals, thereby increasing the price of beef and lamb and other products associated with livestock farming. Therefore, while crop farmers will be overjoyed at the greater profits, livestock farmers will struggle to keep up with the increasing prices to feed their animals and families.

Biofuels production should be implemented carefully. Ethanol and Biodiesel are fine first-steps to becoming less dependent on oil and carbon-based fuels, but they are not the final solution to the world's oil addiction. In the process of making ethanol, large amounts of carbon dioxide are produced alongside the ethanol, due to the use of coal and natural gas to boil water. Ethanol made with sugarcane is more efficient, but that will not help the farmers in the Central African Republic, because they do not grow sugarcane. The UN report stated, "Although the potential benefits are large, the biofuels boom could reduce food security and drive up food prices in a world where 25,000 people die of hunger every day, most under age five. (Bourne, Jr.) While the idea of biofuels is great, I believe that it is not a practical plan for our future. Several different ideas were shared in the Nation Geographic that would be better than the biofuels based on corn and sugarcane if only the research could come up with cheaper and simpler methods of extracting the energy. One method was using the leftover stalks and prairie grasses to ferment the cellulose found in them. This method would not take food away from people, but it is difficult and time consuming to break down the cellulose that they are mostly made of. The potential energy output is amazing, but further research is needed before it is economically fit. Algae fuel production is promising, because it grows extremely fast, but the cost for producing it is also high. The future will be a different place to live, depending on what forms of fuel come out on top.

I believe that the all of the world governments should work together to find the best fuel production method. What does not work in one part of the world could be useful to others. Biofuel production is an important part of the future of our world, impacting the environment, the economy, and the survival of the people that depend on agriculture for their livelihood. While biofuels are being made with corn, sugarcane, and other crops, research is important for increasing yields so that enough food is made to feed the people of the world. Every answer has pros and cons, however, people must determine what is more important, the environment or feeding people. Which processes can help both? Is improving the chances of both worth the money put into research? I believe so.

Bibliography

Africa's Turn: a New Green Revolution for the 21st Century. The Rockefeller Foundation. New York City: The Rockefeller Foundation, 2006. 1-10. 28 Sept. 2007
<http://www.rockfound.org/library/africas_turn.pdf>.

African Rice Center. 2006. WARDA. 28 Sept. 2007
<<http://www.warda.cgiar.org/warda/uplandnerica.asp>>.

"Biotechnology, Breeding and Seed Systems for Africa's Crops." Africancrops.Net. 2007. The Rockefeller Foundation. 28 Sept. 2007 <<http://www.africancrops.net/rockefeller/>>.

Bourne, Jr., Joel K. "Green Dreams: Making Fuel From Crops Could Be Good for the Planet-After a Breakthrough or Two." National Geographic Oct. 2007: 38-59.

"Central African Republic." IRIN. Feb. 2007. 24 Sept. 2007
<<http://www.irinnews.org/country.aspx?CountryCode=CFA&RegionCode=GL>>.

Eva, Hugh, and Jean-Marie Gregoire. "Fire Situation in Central African Republic." Global Wildland Fire Network 25 (2001): 5-7. 24 Sept. 2007 <http://www.fire.uni-freiburg.de/iffn/country/car/car_1.htm>.

Fleshman, Michael. "Africa: Boosting Continent's Farm Yields." Allafrica.Com. 7 Sept. 2006. 28 Sept. 2007 <<http://allafrica.com/stories/200609070732.html>>.

Samarin, William J. Culture of Central African Republic. 2007. 24 Sept. 2007
<<http://www.everyculture.com/Bo-Co/Central-African-Republic.html>>.

United Nations. Food and Agriculture Organization of the United Nations. Improved Food Production and Nutrition of the Population of Markounda. 2007. 28 Sept. 2007
<<http://ochaonline.un.org/OchaLinkClick.aspx?link=ocha&docId=1059339>>.

United Nations. United Nations Development Programme. Human Development Reports. 2006. 28 Sept. 2007 <http://hdr.undp.org/hdr2006/statistics/countries/country_fact_sheets/cty_fs_CAF.html>.

United States. Central Intelligence Agency. The World Factbook. 20 Sept. 2007. 28 Sept. 2007
<<https://www.cia.gov/library/publications/the-world-factbook/geos/ct.html>>.