

Emily Hanson, Student Participant
Hampton-Dumont High School
Hampton, IA

Biofuels and Southern Africa

Everyday over 842 million people around the world go without enough to eat and billions suffer from nutrient deficiencies (“Biotechnology: meeting the needs of the poor?”). Could biofuels be the answer to food security? Could biofuels really help developing countries dependence on foreign oil? These are very difficult questions to answer. In developing countries like those in southern Africa farmers have a very difficult time providing enough food to feed their families.

Southern Africa is an area that has a population of about 64 million people and is about 3 million square kilometers. It is a place that has little technology. Many people live without running water or electricity. I spent a month in Botswana and also visited South Africa and Zimbabwe for a few days this past summer. It is a region that interests me a lot. The people are wonderful people they just have a lot of struggles on a daily basis. They live in an area that is very much affected with AIDS but it is never talked about. They live in a region where they may only get one meal a day and it is almost always the same thing, porridge.

In my paper I hope to explore the area of southern Africa and how biofuels could potentially help this region of the world. It may be an uphill battle in fighting hunger and poverty in the whole continent of Africa. Hopefully, I will show how taking little steps towards food security will make this continent a place that someday will truly be a developed region.

In southern Africa most rural households are crowded. They typically have extended family living together in one house. The houses typically have mom, dad, some grandparents, and 3-4 children. Since AIDS/HIV are so prevalent in this region it is hard to find many families that have this exact set-up. Now many families are missing one or both parents. Typically the father has died and the woman is in charge of the household. In sub-Saharan Africa 75% of the food is produced by women (de Blij; Muller 345).

A typical meal in southern Africa has a starchy food like rice, cassava or corn that is cooked into porridge served with a sauce that has some vegetables or a little bit of meat in it (Desanker; Klemme; Perkins; Prah; Zeleza). The porridge in many areas is called mealie-meal and a family of 7 consumes 50 kg of mealie-meal a month (Mofati). I have had mealie-meal and it has the consistency of oatmeal or grits and does not really have any flavor. When I ate it, I usually added cinnamon-sugar to add some flavor to this food. Mealie-meal or porridge is not something that many of the children like. While I was in Botswana, someone from my group asked what they ate that was not healthy for them, many of the children answered porridge. On special occasions families may have meat or fish as a part of their meal. In southern Africa many children die from malnutrition or starvation. These diseases are more common in rural areas of Africa.

Three-fifth of Africa’s cultivated land is used for subsistence farming (“Africa”). Most of the farms are very small, just a plot next to their home. The soil in much of southern Africa is thin and of very poor quality. Southern African farmers also use inefficient methods to grow their crops. Because of the quality of the soil, methods used, and droughts, an average African acre of corn yields .5 tons of corn compared to the world which averages 1.3 tons of corn per acre (de Blij; Muller 345).

There is a wide variety of crops grown in southern Africa. The main food crops that are grown are: corn, millet, sorghum, barley, cassava, peanuts, soybeans, bananas, oranges, and wheat. It depends on the area that they live in as to what the farm family is growing. Many farmers in Zimbabwe also raise some cash crops that are: tobacco, cotton, coffee, cocoa beans, and fruits. Some farmers in Zimbabwe also raise sugar to be exported and used for ethanol.

On a typical subsistent farm in southern Africa, livestock are also raised. Cattle and goats are the two animals that are typically raised for helping in the fields and possibly selling. Sheep and pigs are also occasionally raised for food. Poultry, especially chickens, are raised to be used by the family for food.

The education in African countries is progressing. In the countries of Namibia, Zimbabwe, and South Africa the literacy rate is 80% (Desanker; Klemme; Perkins; Prah; Zeleza). Many problems with education still remain. There are not enough schools and materials in many rural areas so children do not attend school. In rural areas some children only attend for a few years before dropping out to help on the family farm.

There are many barriers to improving agricultural productivity in southern Africa. They would include government corruption especially in Zimbabwe, the growing AIDS/HIV infection rates and the education of subsistent farmers and their families about more efficient ways of farming.

Many farmers in southern Africa do not have the knowledge about improving their agricultural yields and the knowledge about sustainability. They have been farming using the same techniques for years and may not even know that there are other ways to farm that would improve their yields and in turn allow them to feed their families and possibly even sell their crops to make some money. They also live in rural areas and some have probably never left their village. They do not have access to research and information about different methods of farming.

Another major problem in southern Africa is AIDS. In 2000, there was an estimated 32 million AIDS cases in the world; more than 27 million were in Africa (de Blij; Muller 343). Countries of southern Africa are the most widely affected. In 2001, no country in Africa was more affected by AIDS than Botswana (de Blij; Muller 375). Their average life expectancy went from 60 in 1994 to 53 today (de Blij; Muller 342). Since so many people, especially men, are infected with AIDS it makes it hard on the families to produce enough food. Once the family member has been infected and gets really sick the other family members have to help them stay healthy and are not able to work in the field to grow crops. Sometimes they may not be able to produce anything since they are so busy taking care of their family member. If the father dies of AIDS, the woman has no choice but to take over and learn how to be in charge of the farm.

I think if farmers were educated about ways to improve their farm yields and methods that would also help them produce enough food for their family then they could improve the amount of food that was available to them. I think if someone came to rural villages and taught the farmers easier and more efficient ways to farm then it would help them a lot. For the farmers to be able to start using more modern forms of farming they would have to either have older equipment donated to them or else find a way to get some money so that they are able to use the new equipment. Right now, most subsistent farmers in southern Africa are too poor to afford the proper machinery and chemicals needed to use farming techniques of the twenty-first century that would improve their yields.

I think that biofuel production could help Africa and the subsistent farmer in many ways but for it to really help the farmers the problems in southern Africa need to be addressed first. Problems like: AIDS/HIV, corruption, rapid population growth, and political instability. After these things have been

addressed in some way, then biofuels could really help southern Africa become a region that is able to provide food and money to their people.

Africa is a continent that is really behind in all areas of technology but soon southern Africa could be helping lead the way for biofuel production especially in the country of South Africa (Sorbara). South Africa's gas consumption accounts for 80% of the entire region of southern Africa. Since South Africa uses so much gasoline the group called Ethanol Africa plans to have 8 maize supplied ethanol plants in South Africa. One is already being built and the last is scheduled to start construction in 2012.

There are a few problems with having maize as the main source of ethanol in South Africa. Already there is a shortage of food in the countries of southern Africa and if farmers start producing maize just for ethanol then there will be even less food for the people of this region. There is also the question of whether the use of maize in ethanol will increase food prices. The head of South Africa's Central Bank, Tito Mboweni questioned using maize for ethanol, "That's a doubt in our case because we suddenly have a shortage of maize...also pushing food prices because of production of ethanol from maize" (Sorbara). Maize prices in the world have always differed from the prices in sub-Saharan Africa. The prices were around \$85 per ton and then in March of 2007 they increased to \$285 per ton which is still less than the world average of \$352 per ton.

With the food prices what they are now, more people are dying from starvation because they cannot afford food. If food prices go up too much more because of biofuel production then southern Africa will not have solved any problems, they will have only created more. The main problem that they will create is people starving to death. The purpose of having biofuels in places like southern Africa is to help them reach food security but raising the prices of food does not achieve this goal.

Another major problem with biofuels that needs to be looked at before it becomes something that is produced in southern Africa is the amount of water that is available to the people. Right now in South Africa only 10% of the land is irrigated and just that 10% takes up 65% of the total water use. If there is an increase in maize production it would affect the water supply (Sorbara). If irrigating takes up most of the water, the people that live there will not be able to have any water to drink or bathe in. Many people already have to go long distances for the water that they use and if the water is used for irrigation then they may have to go even longer distances to find water that is usable.

With the production of biofuels there are many benefits that will make the region of southern Africa less dependent on oil imports which will in turn help their economy because they will not be spending so much money on oil. There is also the opportunity for farmers to make more money selling their crops to be made into biofuels. Having more money will enable the farmers to buy new equipment for farming and being able to afford proper healthcare and food for their families. Producing biofuels will also create jobs for people that are not in the agricultural field because they can work in the plants that produce biodiesel or ethanol. If countries start producing biofuels then it may help stimulate agriculture in the region. If farmers are able to sell their crops for a large amount of money then they will be more willing to work hard to produce higher yields.

I think that biofuels production in southern Africa is a good idea but I think it is something that it will be very difficult to implement. I think that before any organization starts to produce biofuels in southern Africa they need to take a look at all of the struggles that this region has and take care of them first. Otherwise, I believe that biofuels production will not help anyone out. The first step would be to get the government of southern Africa to recognize that they have a problem with AIDS/HIV and educate all of the people about this disease. They need to stop letting this be something that is never talked about and change it into something that can be prevented from being spread.

Then they need to bring someone to rural farmers in southern Africa and show the farmers ways that they can improve their yield so they will have enough food for their family. That way their family would not die from malnutrition or starvation and they could have some crops left over to sell and be used to produce biofuels. If they sell the extra to a plant that produces biofuels then it would help the whole region because they would be less dependent on imported oil.

I think if farmers in the area of southern Africa are able to make some money off of the crops that are extra they will be encouraged to continue to learn how to improve the yields of their crops. People will also have to make sure that after farmers see how much money they can make produces crops for money that they do not start only producing cash crops. They need to continue to raise crops for food so that they and their family can survive.

I think that the United Nations can help with educating people on helping prevent the spread of AIDS. They do need to do more than just putting condoms at border crossing and putting billboards up along highways. Many of the people that are being infected with this disease never cross a border so they would not have access to the condoms or they do not know how to use a condom. Also some of the people cannot read so the billboards do not help stop the disease. People need to really educate the children when they are little about how to prevent the spread of AIDS. This can be something that they are taught during school. The education on AIDS needs to start right when they enter school. Most of the children know what AIDS is because they have grown up watching their family members and neighbors die from this disease. They just need to be taught how they can stop it and then maybe Africa will start to get over this terrible disease.

Then the UN, World Bank, along with Ethanol Africa and the local governments in these countries can then start educating farmers on the benefits of higher yields and then help the farmers find plants to sell their extra crops to. After the farmers have raised their yields they will be able to increase food security for their family and then for the whole region of Africa. These organizations also need to really look at if the production of biofuels will truly benefit southern Africa or if it will just create more food shortages.

In conclusion biofuels are something that can really help the region of southern Africa become more developed. Before biofuels can truly help this region to get on the road to being able to have food security there are some issues that need to be addressed. First, the issue of AIDS needs to be addressed and the number of people being infected with AIDS needs to decrease. If the number does not decrease then many rural farmers will become too sick to farm or even die. If the farmers are too sick to farm then they are not able to produce higher yields because they are not in the fields fertilizing and using new techniques that they have learned.

Then the issue of water needs to be addressed. The farmers need to find areas where they can farm without having to irrigate. They do not want to have to use up all of a villages water supply and be left with people that are dying because they have no water to drink or cook with.

People also need to take into consideration the quality of the soil in southern Africa. Farmers could use the better soil for growing crops to be used for food. Then they could use the worn out and excess land for growing crops that can be used for biofuels. Instead of growing maize on the poor soil they could grow sugar or possibly even soybeans which can stand hotter weather and less water. That way the food supply would not be affected.

But the most important thing that needs to be considered before biofuels are produced is will biofuels take away all of the already depleting food supply. If farmers will not be able to increase their

yields then biofuels should not be produced. If biofuels instead of helping food security start to make food security worse then they should stop being produced in southern Africa.

Bibliography:

- “Africa.” World Book Encyclopedia. (Vol. 1, pp. 111-127). Chicago: Field Enterprises. 2003 ed.
- “Biotechnology: meeting the needs of the poor?” Food and Agricultural Organization of the United Nations. 17 May 2004. 26 Aug. 2007 www.fao.org/newsroom/en/focus/2004/41655/index.html.
- Bradshaw, Michael, White, George W, Dymond, Joseph P. World regional Geography: Global Connection, Local Voices. New York, NY: McGraw-Hill, 2004.
- De Blij, H.J., Muller, Peter O. Geography Realms, Regions, and Concepts. New York: NY: John Willey and Sons, Inc, 2002.
- Desanker, Paul V., Klemm, Peri M., Perkins, Kenneth J., Prah, Kwesi Kwaa, Zeleza, Paul Tiyamble. “Africa.” World Book Online Reference Center. 2007. 23 Sept. 2007 <http://www.worldbookonline.com/wb/Article?id=ar006740>,
- Downes, John. “Biofuels may help farming in poorer countries.” Irish Times. 04 Sept. 2007. Newspaper Source. EBSCO: Hampton-Dumont High School Library, Hampton, IA. 16 Sept. 2007. <http://search.ebscohost.com/login.aspx?direct=true&db=nfri&AN=9fy2394992854&site=src-live>
- “FAO-Nutrition Country Profiles.” Food and Agricultural Organization of the United Nations. 26 Aug. 2007. www.fao.org/ag/agn/nutrition/profiles_by_country_en.stm#africa.
- Herro, Alana. “Biofuels in Africa May Help Achieve Global Goals, Experts Say.” Worldwatch Institute. 10 Aug. 2007. 6 Sept. 2007. www.worldwatch.org/node/5284,
- “Kammen, Daniel M. “Bioenergy and Agriculture Promises and Challenges. Bioenergy in Developing Countries: Experiences and Prospects.” International Food Policy Research Institute. Dec 2006. 19 Sept. 2007. www.ifpri.org/2020/focus/focus14.asp.
- Mofati, Tafadzwa. “Fire Destroys 210 Tonnes of Maize.” allAfrica.com. 15 Sept. 2007. 16 Sept 2007 <http://allafrica.com/stories/printable/200709150013.html>.
- Sorbara, Mark J. “Africa: Biofuels and the Continent.” allAfrica.com. 12 Sept. 2007. 19 Sept. 2007. <http://allafrica.com/stories/200709131077.html>.
- “Zimbabwe.” Encyclopedia Britannica. 2007. Encyclopedia Britannica Online. 16 Sept. 2007. <http://www.britannica.com/eb/article-44154>.