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Brazil's Biofuels

Introduction

Around the world scientists are seeking new ideas to replace or extend the use of our current sources of fuels. Over the past ten years major efforts have been made to increase the production of biofuels around the world. Is the increase production of biofuels really an all around good idea? How many people are left without a meal because there food was used instead as a power source or can we find a source that would not cut into peoples food supply? Biofuels are important for developing countries because biofuels help form a more stable economy, and food source for the civilization of developing countries.

According to Earthbiofuels.com statement about biofuels, "biofuels are making it possible to reduce dependence on foreign energy, support our farmers, and improve environmental conditions." Not only is the United States taking pride in making these changes, but other countries around the world have also made major strides in increasing the use of biofuels. The biofuels industries are increasing in Asia, Europe, and other countries. Some of the steps taken by these countries include building more biofuels plants, increasing the use of these fuels in everyday life and searching for more fuel advancements.

Among the several countries around the world that are becoming more and more involved in biofuels activities is Brazil. Brazil is a country with all the advantages of making biofuels. The source of soybeans and corn for biodiesel and ethanol are endless. Brazil is currently ranked second in the entire world in soybean production (United States is ranked first) and Brazil is also ranked third in corn production (China ranked second and the United States is ranked first). Brazil is also using another one of its extremely productive crop, sugarcane, as a source for fuel. (Brazil is the second largest producer of sugarcane in the world.)

Does Brazil have another source other than these that is yet to be utilized? Many are answering yes to this question. But first an understanding for Brazil's economy and agriculture must be achieved.

Brazil's Economy and Agriculture

The definition of poverty can clearly be defined as the state or condition of having little or no money, goods, or means of support. Currently in Brazil a shocking fifty percent of the population can be described by the above definition. This would equal living at about two dollars a day in the United States.

Of Brazil's population, twenty percent live in a rural area. Four out of five people within a rural area are living under the poverty level. Some of the causes for rural poverty include the unequal distribution of income and the extreme inequity of the land tenure. Brazil's poverty is affecting eight hundred and forty million people and two hundred million of the eight hundred and forty million are children under the age of five.

Brazil does have abundance in supply of crops but large plantations, which do not have any issue with food supply, produce most of the crops. Many of the crops grown from these large plantations are sold or exported still leaving the citizens of Brazil without food.

About half of the farms in Brazil have electricity and have access to machinery needed for fieldwork. The cost of land ranges from one hundred to one thousand dollars per acre depending on if the

land is cleared of trees, brush, and so on. Small farms outnumber plantations, but most of the small farms are considered to be subsistence farmers. Most of their food goes toward the use of food supply for their families and livestock. This type of farming is common in Asia, Africa, and most of South America. Nearly all farming is done without the use of fertilizers, which can quickly depreciate the quality of the land, decrease yields, and damage the environment. Some of the crops grown in Brazil include soybeans, corn, sugarcane, coffee bean, rice, oranges, potatoes, and cotton.

Biofuels Possibilities

Now the question that has been lingering shall be answered. Does Brazil have another source for fuel that is being overlooked? Yes. Until recently, no one had tried making this natural fuel, which is made from orange peels and other citrus wastes. Most of the oranges in Brazil are exported but some are used to make orange juice. The by-product of making orange juice is a substance consisting of pulp and orange peel. A recent discovery has drawn much attention to orange juice factories around the world. The orange byproduct, which before was seen as useless, now has become an important part of the biofuels industry. This product has the potential to make ethanol.

The discovery has already been taken advantage of in Florida and here are some of Florida's stats on the breakthrough. Approximately five tons of citrus peel wastes are created yearly in Florida orange juice industries. The five tons of waste has a potential to create up to sixty million gallons of cellulose ethanol. For every half-pound of oil created by the pulp and peel mixture one gallon of ethanol is produced. Before this discovery citrus waste was dried into citrus pulp pellets, which were fed to cattle with little economic advantages. The drying process requires costly equipment because safety precautions need to be made to make sure that organic emissions do not escape into the atmosphere while the pulp is dried.

This orange-based ethanol is created through a compound process of first breaking apart the complex carbohydrates and turning the citrus waste into a liquid substance. Oranges and their peels contain many different kinds of sugars, like fructose. This sugar that is taken out of the components are then fermented using yeast, but the yeast cannot finish the job completely. Help from *Escherichia coli* (*E. coli*) completes the fermenting process where the left over sugars are fermented completely. Once the substance is broken down, the alcohol is taken out and then used during the rest of the ethanol process. The process of converting the unfermented sugars into ethanol, acetic acid, and carbon dioxide takes about two days.

Already within the United States, Florida is making expansions and making it possible for orange ethanol to circle around the U.S. Although to build is a little costly, the overall outcome is encouraging.

Benefits from the Orange Biofuels?

How can this form of biofuels be beneficial to a country with already numerous sources for biofuels? Brazil is among the few lucky countries with multiple possibilities for biofuels. Research has shown that with increase number of biofuels plants also increases employment rates in surrounding areas. This gives the local area an increase in job security, and more economic growth. Spreading the word of this possibility to all of the orange farmers would take time, but I believe that if a group would form to help promote this form of biofuels then this could be the next big thing in the world's fuel efficacy.

With the increase in job security more families would have an income for more consistent food source. Every day would not have to be spent wondering if there would be a food source for your family. Think of the eight hundred and forty million people who are now defined at the poverty level in Brazil. Many of these people's lives could possibly be changed if they were to implement these studies into the Brazilian economy.

Conclusion

One of the factors that may be holding farmers in Brazil back on this advancement is their land condition or the climate in which they live in. Much of the crop is sold so using oranges as a main food supply is not an issue for most of the Brazilian farmers. This type of biofuels would not interrupt with the food supply greatly and the positive affects significantly our number the negatives. The positives for this biofuels are, as said above, a stable economy for surrounding communities and environmentally friendly fuel.

The negative to producing this is the cost factor. Although to build a plant would be costly, once started the community would have a huge economic advantage. Everyone would be eligible to work for the biofuels industry and most of the orange farmers would benefit because there would be an increased demand for their crop, which would increase prices (and also lower the rural poverty in that area).

If it were possible to reach forward into Brazil's future and see what this has done for the people of Brazil, you would see a more structured society with a decrease in poverty because of the increase in jobs surrounding the area. The local orange farmers would no longer have to live on a day-to-day income. Over all this would benefit everyone in Brazil. The economy would have a rapid increase, the environment would benefit from a cleaner fuel, and job security would increase while the poverty levels decrease.

What is needed from the country of Brazil to complete this opportunity is cooperation from the local government. This would include providing a source of money to jumpstart the operation.

Not only does Brazil have this possibility for improvement on biofuels, but other developing countries could also take part in this development. Millions of people could take advantage of the production of biofuels. Although not all of the possibilities for biofuels have been found yet, many simple need to be researched and tested. Biofuels help the environment greatly and decrease our world dependency on fossil fuels.

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