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The Caribbean

When most people hear of the Caribbean, they think of sandy beaches, cruise ships and laid back tropical vacations. While trying to achieve the perfect sun tan, most people fail to realize that the Caribbean is much more than a giant resort. The region itself has over twenty-three countries most of which contain several island chains. The entire region has a land area of 91,000 square miles. Though the entire region is collectively referred to as the Caribbean islands, the countries could not be more different from one another. The region is comprised of a variety of different societies, economies, and individuals. This is due in part to the variety of the landscape. While the Caribbean's most notable features are the coastal beaches, much of the region is mountainous ("Caribbean"). The most prosperous countries; are those who have the beaches that can support the large tourism industry. Not every country or individual is lucky enough to have access to the revenues this industry produces, especially those involved in the region's dwindling agricultural market. In fact, tourism actually hurts the agricultural communities. Limited funds, lack of available land, marketing inadequacies and poor management are just a few of the problems affecting those involved in agriculture (Umaharan). With so many obstacles within this part of the economy it seems impossible to devise a plan that would improve the lives of small farmers in the region. However, the answer may lie in an industry that is emerging all over the United States and Europe, and has the potential to create a limitless market throughout the entire world. This is the production of crops for use as alternative fuels. These "biofuels" could improve the agricultural economies of many developing countries, like those in the Caribbean, but the production of biofuels also raises concerns as to whether the region's small farmers will be able to grow enough crops to create a substantial biofuels market and still maintain a reasonable level of food security within their households. In implementing biofuels production within the Caribbean, it is important to examine the citizens involved in the industry, the factors that could hinder its development, and how establish a production plan that generates more income for the agriculturalist, improving the Caribbean's economy as a whole.

Agriculture has historically been the staple of the Caribbean economy. The marketing of its crops can be traced back to colonial America and the triangular trade. Today's agricultural market; however, is not nearly as big and is getting smaller. Today most agriculture occurs on small farms owned by subsistence farmers (Umaharan). Many of these farmers are Afro-Americans who are the descendants of slaves brought from Africa to work on the large plantations that were prevalent in the region and in the colonies during the 17th century. Today many of the same plantation crops are grown including, but not limited to, sugar cane, bananas, cocoa, coffee, and tobacco. Small farmers also grow crops for domestic use. In fact, nearly all of the crops grown by the subsistence farmers are for the purpose of feeding their own families. These crops include maize, rice, beans, and other vegetables (Marshall). The families, most having at least two or three children, are usually able to grow enough food to support themselves and also grow a small amount of cash crop, which they sell to small local markets (World Fact Book). All of the family members generally have an adequate and well balanced diet, access to proper education and medical benefits. These statistics; however, do not hide the fact that nearly all of the family farms experience widespread poverty (Securing). Subsistence farmers have difficulty earning enough income to live comfortably because the Caribbean has a very small export market for agricultural products. It is also difficult to achieve an organized marketing system because of the many language barriers and lack of cooperation within and between the different countries of the region. Also affecting agricultural trade is the increase in industrialization and tourism (Umaharan). Due to the fact that the economies of the region are so dependent on these two sectors and the revenue that they produce, more arable land is being used for development thus forcing small farmers, who do not have access to modern farming techniques or

technology, to farm in the mountainous regions or on hillsides. This is creating runoff increasing the rate of soil erosion which destroys more arable land and makes the small farmer's crisis even worse. (Madramootoo) The farmer's lack of income can be attributed to a complex combination of factors that produce a chain reaction affecting not just individual farms, but the entire marketing infrastructure of small farmers on a much larger scale.

The main factor affecting the condition of the small farmers is their accessibility to land, finance, and markets. Improving trade status and creating policies will be important in shaping the future of farmers all throughout the Caribbean. A majority of the governments that make up the Caribbean pay little attention to agricultural pursuits. Only twenty-five percent of the region's total land area is used for agriculture, with only eleven percent of that land being arable, or suitable for crops that only last one growing season. The remaining fourteen percent is used for crops such as coffee and cocoa which take a longer time to grow, but produce a crop every year without the need for replanting (Umaharan). Unfortunately, many of the small farmers are forced to grow the arable crops, and due to the land availability, many are unable to produce enough yields to generate an income. Adding to the problem is the fact that government policies that secure property rights of those involved in subsistence farming are virtually non-existent. Governments are more focused on industrialization and service industries, particularly tourism. With all industrial revolutions, including those that have occurred in the United States, comes the decline of agricultural interest (Madramootoo). This lack of agricultural interest is most likely demonstrated by looking at the gross domestic product within the agricultural sector of the region. Most countries are experiencing a steady decline in that area. The country of Haiti, the poorest in the region, has the highest percentage of agricultural contribution to their GDP at just twenty eight percent; (World Fact Book) however, if the country and the region as a whole could merge both the agriculture and tourism economies by creating agriculturally based tourist attractions such as a historical sugar plantation or rum factory some money could be generated toward the agricultural economies and individual landowners. It would also draw more attention to the agricultural economy of the region and its benefits, a topic that currently goes unnoticed by the region's individual governments and international markets as well. Lack of government interest and property hardships are not the only challenge facing Caribbean farmers. The crops are also dwindling as a result of biological factors. The hot, humid climate in the region causes frequent periods of draught, and because the water quality in the region is so low, many farmers are unable to irrigate their lands. Also the region's climate and other conditions make the crops more susceptible to disease. To solve this problem in America, seed companies have been able to produce products that are draught and disease resistant. However, in the Caribbean the farmers do not have access to the finances needed to attract seed companies to the region. Therefore the lack of quality seed reduces yields further reducing income which in reality makes access to finance even harder, contributing again to the lack of agricultural technology in the region (Umaharam). Thus, the problems of the small farmer can be described as a vicious cycle that never stops; however, by eliminating one or two of the factors an opposite chain reaction could occur creating a build up of income and prosperity for agriculture.

The improvement of all these factors is first going to require some help from the governments of the region as well as governments from abroad. The governments of the Caribbean vary to such a large degree that a unified program would be unrealistic and in many ways unattainable. Language barriers and a general lack of unity many hinder the region's attempts to establish a marketing program that benefits all the small farmers. This lack of unity is in part due to the fact that much of the region is comprised of islands that are consequently isolated from one another; (Marshall) however, if governments started on an individual level small farmers all throughout the region would benefit. First and foremost, governments should start by securing property rights of the small farmers. This creates less competition for land and thus decreases deforestation and environmental degradation, which has been a concern of many governments. Secondly, if governments could help finance the agricultural sector through agri-tourism or other means, the industry could have the funds to attract seed and technology companies and have access

to better seeds and technology to produce better yields. The increase of yields alone is not enough to increase farm income; the farmers need an efficient market to sell their crops as well. This could be impeded by the fact that many countries in the Caribbean are dependencies of other larger nations, and thus have to deal with trade regulations and quotas from the more powerful nations, who do not want production of crops in the dependences to hurt the agricultural economy within their mainland (Marshall). If governments expanded free trade agreements to encompass all parts of the Caribbean (Dominican Republic is currently the only Caribbean country mentioned in the Central America Free Trade Agreement), trade and exports would become much easier for small farmers by eliminating some of the taxes and quotas on their crop exports (CAFTA). By increasing the variety of export markets and promoting a variety of different crops, the countries can be more independent within world trade and more equipped to compete within the agricultural market. Essentially a better market would create more income for small farmers and improve the level of poverty in many of the Caribbean counties, where the only existing markets for farmers are small and local.

So where do Biofuels come into play within this cycle? The production of biofuels has come to be in great demand and can open doors to a variety of exports and expands the markets available to small farmers. This would be particularly beneficial to the Caribbean region because of their decline in agricultural export partners in recent years. This lack of a profitable market is one of the main reasons why small farmers in the region are not making enough money and thus living in poverty. Many crops grown in the region are of high demand in the biofuels industry, which uses organic material known as biomass to create fuels. Crops such as sugar cane and citrus as well as many other crops already in place within the Caribbean agricultural markets can be easily converted into ethanol or biodiesel. According to Danielle Murray with the Earth Policy Institute, sugar cane is one of the most efficient crops used for ethanol; "it produces eight times more as much energy as is needed to produce the ethanol." The climate in the region makes it easier for the Caribbean countries to produce sugar cane, which gives the region the potential to be a competitive force in the ethanol industry (World Fact Book). The debate still remains as to whether the farmers will be able to produce enough food for themselves and for the demanding biofuels market. The fact is that most of the Caribbean's food sources are imported from other countries, and the main reason why subsistence farmers have to grow their food is because of their lack of income. If farmers had access to the biofuels market, and could achieve some financial stability, they would be able to buy their food just as most other citizens of the region do, and their food security could be obtained through other means ("Security"). This also allows the farmers to focus more on the production of biofuels themselves and, as mentioned earlier, with increased revenue comes an increase in small farmer's ability to access technology so they can increase their yields to build a substantial long term biofuels market. However, the biofuels market does come with other challenges. There is a considerable cost to producing biofuels so this could cause potential export markets not to want to pay as much for the crops themselves by importing them. With the increase of environmental awareness; however, there is a strong possibility that biofuels production will become a necessity and it will make the production of these fuels considerably cheaper, increasing the rate of production. New facilities like that of a "closed loop feedlot," which uses animal waste generated from livestock to fuel a nearby ethanol plant eliminates the need for fossil fuels in ethanol production, is one emerging technology making the production of biofuels more economical ("E3 Biofuels"). The demand for the crops used in biofuel production will increase, creating more of a market for farmers in the Caribbean.

In order to make biofuels a profitable venture for the Caribbean, a proper program must be implemented. Constructing a program that is similar to the soybean check off and CRP programs in the United States provides the most promising outlook for the production of biofuels in the region and increasing the income of small farmers. In the Soybean Check-Off program, for example, farmers are paid a certain amount of money for every bushel of the crop that they produce, because many of the producer's crops are used for research. If the governments were able to pay farmer for setting aside some of their lands for a trial period to produce crops for biofuels, the small farmers could begin the process of

producing and marketing the crops. The farmer's income would increase dramatically, improving the export markets and increasing the region's Gross Domestic Product as a whole. However, many of the Caribbean countries do not have enough money to finance the agriculture sector of their economy, and thus would have the inability to obtain money for the farmers (World Fact Book). Promoting agricultural tourism, as mentioned, could increase the flow of money to the agricultural sector of the economy, but for a competitive market for biofuels to be successful more money will be needed. It will take some international aid in order to implement a program similar to the check off and CRP programs within the United States. The aid can come from a variety of sources in the form of other national governments or specific organizations. Many of the countries within the Caribbean are dependencies, or owned by another more prosperous country. These dependencies could potentially have the greatest advantages as far as setting up a program and achieving financial aid from their more developed counterparts. The World Bank, which is an organization dedicated to reduce poverty around the world by pulling together funds to help developing countries, could also be another source for financing the program. Countries like Haiti, the poorest in the region, have paid their debts to the World Bank reinstating themselves with the organization (World Fact Book). As with many developing countries, it would be extremely beneficial for the Caribbean to also have access to the technology needed to take on the demand for producing biofuels. The Consulting Group on International Agricultural Research would be the best contributor in this area. They could provide the technology and also have experience with similar programs. The organization would then be able to offer technologies as well as guidance to the countries.

By taking a closer look at the Caribbean, one can see that poverty and other hardships lay beneath the sandy beaches and laid back vacations that first come to mind. Unfortunately many of these hardships tend to fall on the agricultural sector of the economy, particularly those involved in subsistence farming. At the present time the best these farmers can hope for within their business, is to produce enough food for their families and generate a small amount of money through local markets. The small farmers of the region are hindered by a vicious cycle that is ultimately created by a poorly structured and poorly managed agricultural market, where there is little hope for the farmers to create a substantial income to support their families in a comfortable lifestyle. Arable land is rare within the region making it difficult for farmers to raise crops; further adding to the problem is the lack of interest. Due to the growing tourism industry, the agricultural economies of the region are often overlooked except, by those nations that do not have the resources to support this industry and are forced resort to agriculture as their main staple of the economy. Dwindling export opportunities put these countries at risk and increase the already high poverty levels among those who farm. Furthermore, there has been little support towards agricultural ventures from the governments. While the debate on whether Biofuels will help or harm the small farmer still rages on in some other regions. There is an overwhelming amount of evidence to suggest that the production of biofuels will have nothing but a positive impact on the small farmers of the Caribbean area. Biofuels can increase the agricultural market, thus increasing the farmer's income and improving the overall economy. Farmers will be able to produce enough products to create a noteworthy export market, and as for concerns on food security. It has been established that most of the food in the Caribbean is imported from other countries. The increased income among the families will allow them the same access to food as those in other economic pursuits. Creating a program that is similar to the soybean check-offs and CRPs in the United States potentially has an enormous impact on the welfare the agricultural economy and that of the subsistence farmer. Implementing a programs such as these will be a challenge for the region; however, with the help of organizations such as the World Bank and Consulting Group on International Agricultural Research, as well as the countries that help govern the many dependencies of the region will be an essential part in implementing a program. A more efficient market will be an integral part of the process as well, which can be achieved by expanding the Central American Free Trade Agreements. Small farmers will finally be able to generate a sufficient income from their work. Biofuels will greatly benefit their situation and create limitless potential. In the future the Caribbean will not only be a great place to the tourist, but also to those who live there.

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