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Guinea: The Use of Native Plants to Sustain Farmlands and Reverse Desertification

A country rich in natural resources desired throughout the world, Guinea has potential for success through sustainability. Resources like bauxite, gold, undetermined amounts of uranium, and more have not been properly utilized. Unfortunately, many things stand in the way, including poverty at fifty five percent (Boussoura, Madina), land cultivation at three percent (Farm Lands of Africa Ltd.), government instability common to western Africa, deforestation, discrimination, food insecurity and more. Major amounts of food are imported (33%) (Farm Lands of Africa Ltd.), though agriculture is 12.8% of the GDP.

The people of Guinea are called Guinean and are generally poor. Most are substance farmers who grow a variety of starches, grains, and/or vegetables. 85% of the populous follow Muslim, but some are Christian or a variety of traditional religions.

Climate change is affecting the country, but the agriculture industry can be adapted for water scarcity and sustainable agriculture, while increasing crop yields. Native plants to Africa can be grown, are full of nutrients, and are well suited for the soil of Africa. If these traditional plants are grown using improved agricultural practices, they could quickly reduce food insecurity levels and hunger in Guinea. Deforestation and desertification can be slowed or stopped by planting African bushes and trees; all of these provide at least one of the following: shelter, shade for cattle, food, water, forage, and fire wood, and all protect from erosion. By promoting these crops on the global market, farmers could get better prices for their harvest. By using sustainable practices, farmers could give back to the land on which they rely.

Guinea has the potential to be an industrial and agricultural power, but not without significant effort to solve the problems it is currently facing. Lots of native plants in Guinea have multi-purpose uses such as putting nitrogen back into the soil, which promotes the growth of other plants. Sustainability efforts in Guinea, if properly applied, can have tremendous positive effect on almost all aspects of life, for both urban and poor people.

Guinea families are poor and children can expect to live only about an average of 58 years (CIA World Factbook). Polygamy is common in Guinea (Anne Vos), with the average Guinean family consisting of at least two parents, and typically 5 children, with one dying before the age of five due to limited health care access.

11.6 % of the total land in Guinea is arable, although only 2.6% of the land used for agriculture is arable (Anne Vos). 76% of the population of Guinea work in an agricultural field, but farmers do not know how to properly handle chemical and other agriculture waste products. This prevents sustainable farm land as well as a danger to the farmers and their communities. Because of their poverty, most families only eat one meal a day. The typical meal is eaten in the middle of the day and consists of a sauce made of tomato or other commonly grown non-staple crop grown in the area, placed on top of a carbohydrate, like rice or

millet, in the two family-owned bowls; one for men and one for women (Emily L Osborn). Protein levels are low, with malnutrition affecting 75% of children five years or younger. 70% of the population suffers from malnutrition all their lives, according to a study by the Helen Keller Association. Suffering from malnutrition leaves the people vulnerable to diseases.

Access to health care is extremely low; there are approximately 0.1 physicians for every 1,000 people (CIA World FactBook). Worse, the infant mortality rate is 610 out of every 1,000 births. If they do survive, education in Guinea is free to children age 7 to 13. Most don't go to school, though, because of the distance, up to 15 miles, and because they are needed to do physical labor. Most prize boys over girls, with boys more likely to get an education. The literacy rate for girls is 30% (CIA World Factbook); starkly different than the boys literacy rate of 52%.

A farmer typically grows crops on about 32 hectares, or about 80 acres. On this he may plant rice, manioc, plantations, yams, and/or other traditional and nontraditional crops to feed himself and his family. Common livestock include goats, along with ox for plowing.

Rural farmers have almost no viable transportation options besides foot travel. This limits access to markets and to consumers. Many farmers are only sustenance farmers, or farmers who grow enough food to feed their families and work animals. Little money, lack of proper water systems, low education rate, and little knowledge of improved techniques stand in the way of agricultural productivity. Two major barriers to employment in Guinea are political instability and overall debt. Inflation rates, despite a 6% reduction in the last year, indicating economic improvement. Low incomes limit Guineans to buying available products, which usually are not grown domestically. Fruits, meats, and vegetables are simply too expensive to buy, so malnutrition is prevalent.

Crops grown by Guinean farmers are not sustainable. Using poor farming techniques damages their land and cuts into possible profits. Productivity can be greatly improved by using native plants grown using sustainable practices, which does not damage soil. . Implementing sustainable practices and educating the farmers about better options, which can be cheaper and more productive, will definitely pay off for the citizens of Guinea and the government. Often, families do not produce enough food to live on. These farmers can survive and thrive by growing native crops, which are better for the soil than non-native crops, and produce higher yields.

Sustainable agriculture is used throughout first world countries. In third world countries, such as Guinea, farmers are simply not familiar with it, although these soil saving ideas could be easily integrated into the farmers' current practices. Guinea is suffering from rapid deforestation and soil erosion. The current environment will soon be gone if measures are not taken to preserve it.

Women are seen as wives, and only wives, by most of Guinea. Polygamy is common; the first wife is head of the other wives. Women live their lives uneducated and working either in the house or working in the fields, never receiving the same opportunities as men. Many women have been enslaved by warlords and rebels. Women are legally able to vote, but minorities and women are often too scared to do so. Many women are oppressed by their husbands. Some rural poor children have been enslaved by warlords and rebels that try, and usually fail, to take over the country. Rural boys and men are often taken as soldiers,

while women are raped and massacred. Sustainable agriculture, if implemented, would allow more children to go to school, due to the need for less laborious work and for better harvests. It has been shown that when the education rate goes up, health care access improves and the economy improves. When people can get a job, they are less likely to join rebels and will be productive members of society.

Guinea is experiencing rapid climate change. The environment of Guinea is dying. The Gulf of Guinea used to be a flourishing habitat; it is now very polluted and its biodiversity is endangered. Deforestation is a serious problem, though fifty percent of the country is still covered in forest. Farmlands do not use sustainable agriculture, with dust storms common during the summer.

Due to the growing population more land is being used for agriculture, with less left as forest or brush or 'shifted' to forest for a shorter period of time. Due to unsustainable agricultural practices, the land is getting less and less productive, with more of it becoming desert.

Traditionally the land would be cropped until the soil became depleted. Then a new area would be cleared to be cropped. The new cropland would have had its nutrients replenished by many years of forest. As the population increases, more cropland is needed because crop yields are not significantly increasing. The increase in the demand for cropland has reduced, or eliminated, the time shifted land is in forest, reducing nutrients. More sustainable methods of farming would improve crop yields, allowing less land to be used for crops while maintaining production. When less land is used for crops, more land is in forest, reducing desertification.

As the current trend continues, the rural family will continue to struggle. More and more land will become desert, causing more rural people to go to the city, which will increase the city's need for food but there will be fewer farmers to grow it.

Improving sustainability will help the rural farmers by increasing arability of the land. This will increase long term crop yields and in turn, decrease starvation and food insecurity. This will preserve and improve the soil and slow down or stop desertification. Improving sustainability will increase the crop yields, increase the GDP, and decrease importation. The poor will produce more and have an increased profit, reducing poverty levels. With everyone fed, social problems will become more important, sparking human rights movements. This will even out opportunities for education and jobs for women, as well as for rural and urban poor.

Climate change is raising temperatures and increasing water scarcity in rural areas; this will strain all farmers and may cause them to return to old unsustainable methods. Pollution is a major problem in the cities and in rural areas. Pollution can be controlled through proper sustainable measures. Pollution is seeping into the sea and poisoning the water. This will hurt everyone, rural or urban, poor or rich.

Native plants are already known to grow well as they are adapted to local conditions. Growing native legumes such as cowpeas, pigeon peas, peanuts, and lablab in crop rotation with other plant like African potatoes, sorghum, maize, teff, fonio, rice, and/or millet will increase nitrogen levels and will increase crop yields. By more farmers using indigenous plants, improved variety demand will increase and more interest will be taken in Guinea as well as West Africa.

Promoting the use of improved crops such as NERICA rice, while using practices such as crop rotation, manure fertilizer use, and improved irrigation, will increase yields and the sustainability of Guinean agriculture.

Planting forage legumes such as clover, alfalfa, lespedza, and others will provide forage for animals to eat, while replenishing the soil, increasing animal health, and reducing desertification. All animals, including humans, have natural waste products, or manure, that is easily absorbed into the soil. Animal dung will enrich the field with nutrients necessary for plant growth. If human manure can be taken from the cities and used to fertilize fields efficiently, it will cut down on city waste and increase agricultural productivity.

Communities will play a large part in reducing desertification and increasing sustainability. Planting trees, such as locust bean and marula, in communities and pasture land in danger of, or in the process of, desertification will reduce erosion and promote plant growth by adding nitrogen to the soil. These fruit and nut trees, along with monkey oranges, safou, and Maringa can combat erosion and desertification while providing sustainable food, shade, shelter, and a safe place for children to play. Fruits from these trees are full of vital nutrients, like protein and vitamin B, which the rural poor are lacking in their diet.

Holding weekly workshops in communities for local farmers and ranchers to learn sustainable and efficient methods for growing crops and dealing with agriculture waste will reduce the negative impact of crops on the soil. Introducing alternative insect control measures, other than pesticide and insecticide treatments, will promote helpful insect populations while discouraging destructive insect populations. These weekly workshops could teach and promote sustainable farming practices like crop rotation, legume use, and rotational grazing. Implementing programs like Integrated Production and Pest Management (IPPM) in rural areas of Guinea could be successful with funding readily available through non government organizations, needing little help from the government.

If the national government promotes IPPM workshops in rural areas, there would be an increase in turnout and effectiveness of the workshops. If they provide a little funding for communities with IPPM weekly workshops, the impact on sustainability in the regions would increase dramatically. Guineans would be willing to adopt improved methods and apply them to their workplaces.

Supporting and funding planting trees in communities and fields as a source of food and shade will help the communities make it through the hungry seasons and decrease malnutrition, as well as preserve the culture of Guinea through indigenous foods. Planting trees has been a proven way to stop desertification and promote local bio-culture.

Planting marma, as well as trees, in desertification areas will provide biomass to combat soil erosion and desertification, as well as provide something for animals to eat. Animals will deposit manure to the ground, which will add nutrients and seeds of other plants to the soil, recreating a diverse bio-culture. These plants will in turn attract more animals which will replenish the soil and add more plant seeds. The marma, in the mean time, will advance further into desert areas, decreasing the desert area and increasing usable land.

Organizations such as the Millennium Development Goals and the UN will help provide funding and

resources to the promotion of sustainable agriculture in Guinea. The use of these resources will help Guinea start, and continue to expand, sustainable agriculture practices and stop desertification.

Urban areas can start and support composting centers which will send compost and waste to the rural populations for manure. That will reduce city waste and create jobs in urban areas. A small fee per year can be charged to pay for running the facility unless alternate funding is obtained.

Seed and seedlings can be expensive. By giving communities and farmers loans from the World Bank and similar banks to purchase improved seed and seedling trees, which are affordable and can be paid back when the harvest is sold, the situation in Guinea can be improved. There will be bad harvest years, but due to the planting of fruit trees people will not starve and can sell the fruit at markets, providing money for loan payments.

Corporations selling seedlings may donate to the communities and ranchers. They may also help the national government pay for sustainability, which creates future business for the corporations.

Using the current agricultural methods, the population will continue to rely on imports and will continue to fall into debt. The population will increase, increasing demand for food. The crop yields would not increase and arable land would decrease. This would cause unrest among the people of Guinea, causing rebels will get more recruits. Solving food insecurity through sustainable agriculture, with the use native plants and education, is self-sustaining and will quicken the economic recovery of the nation.

Desertification can be stopped. Efforts to promote sustainable agriculture can and will stop desertification and food insecurity in Guinea. Industries and agriculture will grow and climate change will be slowed. Guinea has a hopeful future, but if sustainable agriculture cannot be reached, Guinea will slowly become desert. Long term solutions, not monetary aid, are needed to stop food insecurity and climate change. Guinea is a country full of potential. Successfully implementing this plan, with hard work from the people of Guinea, can lead to a successful tomorrow.

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