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Paraguay, Sustainable Agriculture

Paraguay: Fighting the Dominance of Soybeans

Although 15.90% of Paraguay is in poverty, the country itself is not poor. The country is the fourth largest exporter of soy in the world, expecting to reach 12.46 million tons of production by 2029. Paraguay also houses 12-14 million heads of cattle. Because Paraguay is a major exporter of staple products such as soybeans and cattle, most of the arable land is used to harvest these exports. Thus, people in Paraguay are forced to turn to limited land with subsistence agriculture, farming to maintain one's own family, because the government does not ensure food security for the population of Paraguay. There are very few people who are in charge of the available land which makes the land inaccessible to many. Therefore, there is a large population in Paraguay who does not have a sustainable food influx because they have no land to harvest it on. This has led to many Paraguayan citizens struggling to find their next meal.

Paraguay is a land-locked country in South America that has a population of 7.045 million people. Paraguay varies from a subtropical to temperate climate, and this climate is also common in Paraguay's surrounding countries, such as Bolivia, Argentina, and Brazil. The majority of people, 61.88% of the total population, live in cities where there are job opportunities. Paraguay is a representative democracy led by a president. Before Paraguay had a representative democracy, it was a draining dictatorship where the economy had struggled to thrive. Today, Paraguay grows away from the old economy and expands production in its major exports such as soybeans and cattle (cash crops that are very beneficial to the economy). Although these major exports are profitable to Paraguay's economy, they do not benefit the natives. Natives are therefore forced to turn to subsistence farming, and these farms are only about 0.2 hectares in size (similar to the farm size of Guatemala - 0.2 to 1.5 hectares). The majority of farms are dedicated to growing soybeans for international markets, and few hectares of land are left to the people for their own crop farming.

A typical family in Paraguay has 4 people; the country average is about 3.9 people per household. Such a family lives substandardly with vital necessities, but over 30% of the population lives with overcrowded and unpleasant conditions. The traditional Paraguayan family often lives on a native dish called Sopa Paraguaya, a maize bread baked with cheese and onions, as well as tortillas, cassava, and empanadas. Most of the production of these food sources come from crop farming because the majority of land is used for large exports. Individuals in Paraguay traditionally work in large industries like automobile production or other manufacturing plants. The average wage is estimated around 8,220,000 PYG per month which equates to \$1,229.73 in U.S. dollars. Most families have access to free education, but 10% of families do not because they must work constantly to maintain income. Even for those who have the ability to utilize education, dropout rates are high because of lack of personal motivation, lack of familial support, and other unfavorable conditions. Circumstances that may get in the way of a stable education for children include surviving in poverty, marrying at young ages, and living on the street with low access to opportunity. There are a lot of barriers to opportunity aside from education, but most families still have

access to basic necessities such as clean water and electricity which are rather abundant. Additionally, public national health care is astonishingly accessible and affordable for it is only \$13-20 per year.

Paraguay is infamous for being known as economically wealthy but socially poor. This means that the country's economy thrives from its exports, but the people within the country do not get any subsequent economic benefits and continue to struggle through life. Unfortunately, about 45% of Paraguay's population is dependent on subsistence farming, and only about 1% of the population own 77% of the land. The ratios are very uneven, and this is a result of the laissez-faire, or a hands-off approach, of the government. Since the government is unaware and seemingly does not care about how the people of Paraguay are fed, this task falls into the hands of the people without proper support. Because of this unfair distribution of land and extremely large numbers of people dependent on truck agriculture, sustainable agriculture - agriculture that focuses on producing long-term crops and livestock while having minimal effects on the environment - remains in jeopardy. These developing trends endanger and even threaten to eliminate intensive farming because of the laissez-faire attitude of the government and the worsening levels of deforestation and soil degradation. The contributing factors of the trend are the monocropping of the soybeans and the growing of the beef industry. With the growing importance of soybeans and cattle, Paraguay's forests and land are being stripped to enlarge the area for harvesting soybeans and cattle ranching. As the government regulates the production of these exports, they are oblivious to the beautiful and valuable land they are destroying.

This general problem of unmaintained sustainability affects rural communities more than urban communities because the land that is being ruined is part of only the rural community. Women are affected because of the deterioration of family farms. Overuse of the soil has caused husbands to move to urban areas to find promising job opportunities, leaving women alone to run their households in rural territory. Marginalized groups are also affected by these changes because they are separating these groups not only on land, but also in society. In general, land is losing nutrients, and this has an effect on everyone in Paraguay. If this trend of land degradation continues, it is predicted that there will be declining yields for the country's major crops; this could be to the detriment of Paraguay's economy. There could be a myriad of disastrous consequences if action is not taken to support and hopefully promote growth for intensive farming in Paraguay.

Solving the issue of sustainability in Paraguay is no simple task. Considering that the land sufficiency and usability in Paraguay is declining, it is important to make the most of the resources that are available. A possible solution to the lack of ecological farming in Paraguay would be to tap into foreign relations, such as those in nearby countries like Uruguay. Paraguay could communicate with Uruguay through their connection in the United Nations, or they could collaborate privately. It is noted that Uruguay has an abundance of arable land that could technically feed fifty million people, far surpassing its population of 3.5 million. Additionally, 80% of Uruguay's land is used for agriculture, and this land can either be used by Paraguay through an agreement between the two countries or the products made on the land could be sold specifically to Paraguay. Paraguay could gain a lot from Uruguay's extra help, and this could be a potential solution to create sustainable agriculture in Paraguay. With the distance of only a seventy-five-minute plane ride in between the two countries, they are easily accessible to each other. Conveniently, many businesses have already been waiting for an opportunity to improve the trade relations between Paraguay and Uruguay.

The Paraguayan government would have to take control of this task because it involves governmental and land regulation and communication. The wealthy government would have to make this proposal to Uruguay. This transaction must take place through the Empresas por Acciones Simplificadas (EAS), which encourages business development and attracts foreign investments for Paraguay. Aside from the government, Paraguay's community will need to acquire support by gaining publicity and collecting funds from benefactors. The outcry of concern sourcing from the current reliability of sustainable agriculture of Paraguay's society will push the government to communicate with Uruguay, therefore creating a relationship. In return, Uruguay will receive a direct trading arrangement and alliance with the fourth-largest soy exporter in the world. This project can be sustainable through continued maintenance from the community and government. Eventually, the transaction between Paraguay and Uruguay will become seamless and turn into a natural occurrence. Although Paraguay could be in danger of tension with Uruguay because of potential overreliance, Paraguay can avoid this by occasionally growing food on its own land to help restore the soil with nutrients. An effective application of this method would be crop rotation, or seasonally adjusting what crops are to grow in a given area. Additionally, native cattle can be placed on the soil and develop a mutual relationship with the soil. Over time, Paraguay will create a sufficient foundation for food production, and they will once again maintain sustainability.

Another possible recommendation to work toward solving the problem of sustainable agriculture in Paraguay would be to develop a local relationship within Paraguay's subsistence farmers. As stated before, about 1% of the population in Paraguay owns approximately 77% of the available land for crop farming. This differing distribution of land is very detrimental to the large group of maintenance farmers who do not have equal access to the land. Therefore, the owners of the majority of this land should consult with the government and turn it into one large plot of land where crops will grow for all subsistence farmers. The 1% who has control over the land would lead the project and bring it to the government. Not many regulations are necessary to execute the plan because land is voluntarily being put into different use. Of course, the laissez-faire attitude of the government will need to be amended; governmental regulation is necessary to institute rules for production and distribution of the land used for crop farming. By putting in the work to create this combined land for crop farmers, the government can be confident that everyone in Paraguay will have enough food. This is essential to establishing the best version of Paraguay where all seventeen administrative departments have the resources they need. Saudi Arabia applied a similar strategy as they strengthened their internal powers to maintain food security in agriculture and marine fisheries, just as Paraguay will reinforce its sources by joining all its land dedicated to subsistence farming. Through Paraguay's method, all crop farmers will be satisfied with the collective yield and the previous unequal distribution of land will be diminished.

Uniting Paraguay's land is only one step of organizing sustainable agriculture. An ample supply of nourishment is not guaranteed, although the design of the land distribution does allow for it. So, new ideas and technologies need to be employed to maintain sustainable agriculture. A new technology called small particle technology edits conventional fertilizers and nanosizes them - advanced carbon complexing technology and low molecular weight acids are applied. Chelation, a process that allows plant micronutrient metal ions to move more quickly into a plant, is then utilized. The whole process of small particle technology allows plants to develop more abundant harvests quicker, and this can contribute positively to the lack of sustainable agriculture in Paraguay. This brand new fertilization technique

coupled with the practice of permaculture could lead to even greater yields and satisfy a far larger number of Paraguayans. Permaculture is agriculture designed so that crops can function self-sufficiently without frequent human intervention. Permaculture is a convenient approach towards running a farm because it relies on independently carried out, beneficial symbiotic relationships. Nevertheless, true sustainable agriculture not only relies on fertilizers and specially-designed agriculture but also on clean and nutrient-filled water. Clean and rich water makes for healthy and abundant crops, and impure water makes for the opposite. Pristine and nutrient-rich water generates nutritious food in plants and results in flourishing harvests. Water that is rich in nutrients such as nitrogen (the most important mineral for plants) leads to an even higher yield and shorter production time in a crop. Once the designated land for subsistence agriculture has been established, these methods will increase the quality and quantity of harvested foodstuffs for Paraguay's citizens while crafting a more satisfied nation.

Paraguay has a unique culture consisting of interesting societal norms and preferences. Being one of the world's largest soy exporters, the government is mainly concerned with producing soy as a cash crop to help Paraguay's economy while its population is virtually ignored. Sustainable agriculture in Paraguay has become a growing problem over the past decades, and solutions need to be put into action to fully solidify the reliability of food production for the people. Pushed by society, the government can take action to bring all of the land dedicated to subsistence farming together for those who rely on it while implementing new technologies and ideas, and the government can also make foreign deals with Uruguay to develop new methods for durable agriculture. With these potential solutions, Paraguay's sustainable agriculture will be secure.

Bibliography

“Children of Paraguay.” *Humanium*, 4 Apr. 2019, www.humanium.org/en/paraguay/#:~:text=to%20raise%20children%20in%20good%20living%20conditions.&text=This%20prevents%20underprivileged%20children%20from,access%20to%20the%20education%20system.

“Children of Paraguay.” *Humanium*, 4 Apr. 2019, www.humanium.org/en/paraguay/.

“Country Profile Paraguay.” *ITC*, www.intracen.org/exporters/organic-products/country-focus/country-profile-paraguay/#:~:text=There%20are%2017%2C705%20hectares%20of,carried%20out%20by%20small%20farmers.

“Data Center: International Indicators.” *Population Reference Bureau*, www.prb.org/international/indicator/hh-size-av/map/country/.

“Paraguay - Agriculture.” *Encyclopedia of the Nations*, [www.nationsencyclopedia.com/Americas/Paraguay-AGRICULTURE.html#:~:text=Cultivation%20utilizes%20about%205.7%25%20of,\(5%2C646%2C000%20acres\)%20in%201998](http://www.nationsencyclopedia.com/Americas/Paraguay-AGRICULTURE.html#:~:text=Cultivation%20utilizes%20about%205.7%25%20of,(5%2C646%2C000%20acres)%20in%201998).

Paraguay - FOREIGN RELATIONS, countrystudies.us/paraguay/64.htm.

“Paraguay - Housing.” *Encyclopedia of the Nations*, www.nationsencyclopedia.com/Americas/Paraguay-HOUSING.html.

“Paraguay - Rural Population.” *Paraguay - Rural Population - 1960-2019 Data | 2021 Forecast*, tradingeconomics.com/paraguay/rural-population-percent-of-total-population-wb-data.html.

“Paraguay.” *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., www.britannica.com/place/Paraguay.

“Paraguay.” *Operations*, www.ifad.org/en/web/operations/w/country/paraguay.

Project, Borgen. “Sustainable Agriculture in Paraguay: Growth and Threats.” *The Borgen Project*, Borgen Project https://Borgenproject.org/Wp-Content/Uploads/The_Borgen_Project_Logo_small.Jpg, 12 Nov. 2019, borgenproject.org/sustainable-agriculture-in-paraguay/.

Trase. “Delivering Transparency for Sustainable Agriculture in Paraguay.” *Medium*, Trase, 9 July 2020, medium.com/trase/delivering-transparency-for-sustainable-agriculture-in-paraguay-c833ae31d5ee.

“Uruguay.” *StackPath*,

[inglebyfarms.com/farms/uruguay#:~:text=Over%2080%25%20of%20Uruguay's%20land,for%20breeding%20and%20fattening%20cattle](https://singlebyfarms.com/farms/uruguay#:~:text=Over%2080%25%20of%20Uruguay's%20land,for%20breeding%20and%20fattening%20cattle).