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Hunger and its causes, effects, and possible solutions in regards to Central Latin America.

Hunger is one of the biggest problems in our world today. Hunger is defined by Webster as the physical debility caused by the lack of food (“Hunger” 242). Hunger, however, is not just a physical condition. Unfortunately, hunger is a way of life. Hunger causes people to suffer not only physically but emotionally as well. Everyday, people faced with starvation may ask themselves, “Can I condone stealing food from someone else to survive? What if, by stealing from them, I make them hungry? What about my family?”. No one should have to be faced with choices like that. That is why hunger is one of the chief problems on this earth, and must be stopped. Hunger is a pressing concern no matter where you look. However, not only does South America have some of the most impoverished people in this hemisphere, it also could contain the answers needed to help them.

The bulk of the people in South America live in the southern half, either in or near the cities or within 200 miles of the coast (“South America“). This is because the cities, obviously, are urbanized. They have access to technologies and supplies that the rural areas of the continent do not. It is important to note that most people living in these comfortable conditions are of European descent (“South America“). Similarly, the coast can be viewed as a tourist attraction. In order to keep a strong flow of guests, it must be relatively up to date and safe. This reality is unfortunate, because it allows the rest of the world to overlook the poor, rural areas and peoples.

Despite the “popularity” of the cities, many people remain in relative isolation from the rest of the world. These people are the poor, indigenous ones, residing chiefly in Bolivia, Ecuador, Peru, and Paraguay (“South America“). These areas are situated in what is referred to as the lowlands: the area below the Andes mountains. In these areas, due to the mountains and overall difficult accessibility, it has remained relatively uncivilized. Many of the indigenous people are nomadic farmers, an occupation considered to be seriously outdated by our American standards. In these situations, a settlement is almost always located near a river. Rivers provide an excellent source of water for myriad purposes. Chiefly among these is the obvious, such as for drinking, bathing, and transportation. Settlements are also built in respect to the locations of other settlements. Naturally, groups build villages near allies and separated from enemies. However, since slash and burn methods of farming are implemented, these villages remain on the move, changing location every few years (“South America Ethnography“). These people are the ones growing most of the food, and ironically, the ones suffering from poverty and hunger.

As a matter of fact, the poorest people in the whole entire South American continent are the indigenous villages of Bolivia, Peru, and Ecuador. But these lowland regions are not the only ones victimized. Brazil has roughly twenty million “rural poor people”, and three out of four people living in the Andes are below the poverty line (“Rural Poverty in the Americas”). “Living conditions in the region are at the medium poverty level”(Gentry). For an entire people to have to suffer at any level of poverty anywhere, especially somewhere so close to home (relatively speaking) is unacceptable.

In order to understand at least a part of the cycle of poverty these indigenous people endure, one must comprehend the inception and life of a typical family. A family begins when a couple has their first child. At this point in time, they begin to farm a small plot of land, given to them as a gift in most circumstances. When the child is old enough, he (or she) helps farm. Then they have more children and acquire more land. But, just as is the case on the original plot, most of the product created on this new

land must be sold for a very small amount of money in order to buy the necessities of life that cannot be grown on the farm. So, even though more land is being farmed, the ratio of people to food (or rather lack of) remains constant. In addition, due to the perpetual life of farming, most adults are not schooled past grade five. And in areas such as these, where forty-plus percent of the populace are under age fifteen and families are having one to fourteen children (Coomes), education is crucial for technological evolution.

The average household for the area includes six people. The amount of land held by the average family (including that for housing) is approximately ten and one half hectares. The average family eats what they grow, and uses what little money is earned to buy the things they cannot. The average yearly profit for a household is around two thousand US dollars. Most non-land assets, such as fishing gear and live stock, are valued at under five hundred US dollars per family (Coomes). Clearly, something must be done to change the average.

Roughly two fifths of the South American continent is rain forest. That is roughly 1.2 billion acres("Rainforest Facts"). Ergo predictably, tropical forest is the dominant form of vegetation in the South American lowlands (Gentry). This is both beneficial and detrimental to the indigenous farmers of the area. The bulk of rainfall that occurs on the South American continent is actually water that has been recycled via rain forest ("Climate Change 2001: Working Group II: Impacts, Adaptation and Vulnerability"). Also, rain forests contain many different types of soil and wildlife, making them ideal locations to grow many different types of plants, and even herd animals (Gentry). The rain forest of Amazonia is even considered to be the "final frontier" for people here on Earth ("Rainforest Facts"). This wonders of this vast rain forest are, botanically, unexplored (Gentry). However, local Mestizo people have discovered uses for at least ninety percent of the things they have found in the forest (Gentry). Just imagine, if the technologically sheltered locals can create uses for ninety percent of all plant life in the forest, what could we do with our vast scientific knowledge? The answers to solving world hunger could be hidden in the rain forest!

Despite the promise presented in the rain forest and it's numerous undiscovered wonders, local governments feel it is more pressing to create usable farm land. After all, dense forest, steep slopes, and unfavorable climate conditions along with crude agricultural methods limit the productivity of any farmer, no matter how specialized. Therefore, government officials feel that destroying rain forest is the optimal solution. Superficially, this choice seems to make sense. "Lets get rid of the useless tress and create some useful farmland". However, this is very short term. The Amazon rain forest alone creates approximately twenty percent of Earth's oxygen ("Rainforest Facts"). But despite the scientific risk to mankind this poses, the creating of farmland is also hurting the farmers. As stated previously, the rain forests create rain by recycling water. This rain being created is the same rain being used to water crops. If the forests were destroyed, the rain would become far less frequent and less generous. It would seem like a drought in comparison. To quote the Intergovernmental Panel on Climate Change, " Large scale deforestation is likely to result in increased surface temperatures, decreased evapotranspiration, and reduced precipitation" ("Climate Change 2001: ..."). That is why deforestation is not the answer to our food problems, nor to helping the indigenous people of South America.

Regardless of what possible benefits deforestation could have, it is clearly not necessary. Approximately fifteen percent of South Americas land mass is used for farming, and when you consider that the land mass of South America is 17,840,000 square kilometers, that is a lot of land. And when one considers that about thirty percent of the South American people are farmers, one realizes that there really is the capacity to create some food here ("South America").

Although farming for crop is prevalent, there are also many other ways people in this area of the world find food and use the land. Livestock grazing is very important in the grassland regions, and meat

is one of South America's many exports ("South America"). Also notable is the recurrence of hunting and gathering. The rain forests not only provide rain for the land, but also food for those willing to conquest. Wild pineapple, Brazil nuts, and other undomesticated edibles are among the most common things gathered from the forest (Gentry). However, gathering nuts in a forest is hardly enough to support a person, let alone a family, or, heaven forbid, make profit.

The bulk of the indigenous people of South America are your basic farmers. They may gather wild fruit on the side, similar to how you or I may grow fruit in a garden. Crops grown in this area include primarily maize, cassava, rice, and plantains (Gentry). Bananas, sugarcane, and tobacco are also grown ("South America"). Additionally, there is quinoa, a special grain originally unique to this area, of which I will elaborate upon later ("Crop Scientists Improve 'Supergrain' for Impoverished Farmers"). This may appear to be quite the list of crops and exports, but it is not the same as modernized farming. Here in the United States of America, we have, more or less, genetically engineered crops. These crops have been selectively bred to not only taste good and produce more, but to be more durable and to be able to survive hardship in the field. The indigenous people of South America have no such crops. Instead, they have exactly what nature gave them- the raw necessities. In addition, although there is plentiful nutrition for vegetation and different soil types in the rain forests, people obviously cannot farm there. This means that the soil used by most lowland farmers is thin and nutrient-deprived. To counter act this (at least temporarily), the people use a slash and burn method of farming. Slashing and burning involves cutting up any rouge vegetation in the area and letting it dry over a period of time. It is then burned to create ash, which in turn fertilizes the soil, naturally, so that the next seasons crops can produce yield ("South America Ethnography"). This, however, can overly deplete the soil of its nutrients, causing the people to relocate every few years in search of nutrient fresh soil.

Still, there is hope for the "weak" plants of South America. Plants in this part of the world are a valuable source of germplasm (Gentry). Germplasm is the hereditary material used today to biologically engineer new and improved species of plants. Due to the diversity of life in South America, it's plants can be studied and learned from. In addition, it is probable that one of the first areas to receive a plant improved from South American germplasm would be a South American country . A prime example of this is quinoa. Quinoa (pronounced keen-wah) is a grain like plant grown primarily in Peru, Bolivia, and Ecuador. Dubbed a super-grain, quinoa contains a complete balance of protein, as well as being a good source of dietary fiber and phosphorous, and is even high in magnesium and iron. Quinoa is one of the staple crops grown by the poor farmers of the regions, and is possibly what has kept them alive. Unfortunately, though, most farmers who grow quinoa do not produce enough to sell for profit. In addition, due to the relative technological isolation of this area of the world, quinoa has not undergone genetic enhancement ("Crop Scientists ..."). If quinoa could become hardier and, if possible, even healthier, at least the farmers could sell their crop to get some money.

Unfortunately, the condition of quinoa farmers is not uncommon. For most South American farmers, the major source of food is their own produce (South America Ethnography). Not only does this potentially exclude crucial nutrients from one's diet, but also it greatly cuts down on the amount of product one can sell. It is an ever-spinning cycle of poverty and hunger that these people cannot do anything about. To further complicate things, studies project that yields of crop, such as maize, wheat, barley, and more are to only decrease. Even when exposed to a concentrated carbon dioxide fertilizer (which the indigenous people would not have access to anyway) the yields still went down ("Climate Change 2001: ..."). It appears that genetic research is the only option.

And as if the complexities created by geography and technological situation were not enough, problems that we are creating, such as global warming, along with natural phenomena are adversely affecting farmers, especially in the temperate areas of the world. Global warming, for example, is causing a rise in temperature around the globe. This rise in temperature may sound beneficial to farmers, who

cannot farm in the winter, but in reality is not. If temperatures rise too high, plants begin to die. In effect, the rising temperature is actually shortening the growing season. Temperature related phenomena, such as El Niño-Southern Oscillation. This phenomenon can cause irregular wind currents and effect rainfall an unpredictable manner (“Climate Change 2001: ...”). An example of this negative effect would be malaria-infected mosquitoes being blown from a Brazilian forest into a small mountain village in Peru, or having cholera-contaminated water evaporate in a jungle and precipitate in another, populated, and unprepared area. In addition to El Niño, there is the situation of ozone depletion in our atmosphere. Not only could the increased levels of ultra-violet radiation adversely affect the crops being grown, but also the poor farmers growing them who undoubtedly are not wearing sunscreen. Also farmers in this area are ill-equipped to handle any pest/insect related epidemic that could potentially wipe out all their crops (“Climate Change 2001: ...”).

Another huge problem for these areas are their economic situations. For the most part, poverty in South America is associated with unequal distribution of productive land (Gentry). Climate change may also increase this imbalance in wealth and power (“Climate Change 2001: ...”). As a result, indigenous peoples are demanding more better land and more power in the government (“South America“). But the socioeconomic systems here possess little adaptability (“Climate Change 2001: ...”). As unfortunate as it is, the governments of many of these nations today reflect those when the native Amerindians were conquered by the Europeans (“Climate Change 2001: ...”). Today, most of the “good land” and power is coveted by those of European descent. I am not implying that these people are in any way bad farmers, but, by controlling all the good land themselves, they are (unconsciously) forcing the native peoples to farm the bad land, and to be pushed into poverty.

Then there is the obvious problem of having personal ambitions. People in general do not want to be poor or hungry or sick. In isolated farming villages, people do not have the access to medicine, let alone useful farming technology or higher education. It is scenarios like these that are causing people to abandon tradition and migrate to the cities, where unfortunately, their lives are not much better (“Climate Change 2001: ...”).

Then, of course, there is that whole bad economy thing. If a farmer is fortunate enough to produce enough crop that he can sell it, he may not get very much in return. “Economic problems and social unrest have led to considerable unrest and political instability”(“South America“). This fact is not helped by the constant state of inflation and debt that these poor countries are forced into in order to attempt to modernize their way of life.

Now, the true purpose of this paper: What do I think should be done? Well, in my opinion, the main problem is the lack of attention this area receives. More densely populated areas, such as India or Africa are receiving most of the worlds attention in regard to hunger. I do not want to belittle those places, but I think that there is more potential to solve this problem in South America than anywhere else. For all we know there could be a super-plant that supplies every nutrient needed somewhere in the rain forests (although that is unlikely).

Also, I think that biologically enhancing South American crops, such as quinoa, is crucial. Not only would farmers benefit from increased produce, but so would everyone else. If you consider that thirty percent of the South American people farm subsistence (“South America“), and if every farmer in South America produced five percent more yield each year, that is a lot of food to say the least. Sure, it’s not really a surplus, but it is a start. If indigenous farmers were able to generate surplus food, it could be used to help other impoverished people elsewhere.

Additionally, on a more financial note, South America is much closer than most other areas with similar needs in such quantities. The money used to ship supplies to other continents has to be an

immense amount. I definitely think that all places deserve this kind of support no matter where they are, but few other places in the world have the potential that South America does. South America's case is unique because not only does it need help, but, if given it, it could greatly help others.

I also think that it is important for these people to have a fair government. If the government is corrupt at all they can totally manipulate the use of soil and farmland. Look, for example, at Colombia. Colombia produces over one half of the world's cocaine ("South America"). Sure, cocaine is profitable for those in charge, but just imagine if those fields could be used to grow edible food, to be used for the betterment of humanity. Clearly that is good soil, but greed prohibits people to help others at the expense of themselves.

In conclusion, South America is a very important part of our world. South America has the raw materials needed to become a great supplier of food to the world. However, it cannot do it alone. It needs technology and education in order to fully capitalize on everything that has been given to it. Also, it is blatantly obvious that the problem is not lack of farm land, but lack of efficient methods. If the farmers could modernize their methods and if scientists could modernize their crops, the amount of produce generated could greatly increase in a relatively short period of time. And this food could help everyone, even us here in America. "South American crop... is arguably the most nutritious on Earth" ("Crop Scientists ..."). Not only would indigenous people be able to support themselves, but they could do it with a sound diet and variety of foods that could only be grown in the diversity of South America.

Overall, helping poor South American nations, such as Peru, Bolivia, Ecuador, and Paraguay, to grow food will help their economy and even their culture. And by enriching their culture, we will enrich their capacity to understand the similar problems faced by others. In effect, it would enrich their way of life.

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