

Madeline Topf
Ames High School
Ames, IA
Ecuador, Factor 11

Ecuador: Education and Agricultural Programs to Eradicate Malnutrition

According to the World Bank's poverty analysis, two out of three people living in Ecuador's rural areas are poor. These rural poverty rates are higher than urban rates. This poverty is attributed to lack of education, healthcare, and land. However, poverty levels among the indigenous peoples occupying the Sierra and Amazon regions are much higher.

A typical rural family consists of a large household. They are statistically less educated, have higher unemployment rates, and lack access to healthcare. The standard potato and grain based diet common to these people is inherently lacking in vital nutrients such as vitamins A and B12, along with equally important micronutrients such as zinc, calcium, and riboflavin. This problem is most present in the indigenous areas of Ecuador which are the most impoverished.

Farms are less than 10 hectares on average. Use of modern technology is limited by income, small farm size, and lack of labor. The Spanish plow is still used in many places, otherwise farmers dig with a stick or a large bladed hoe called an *azadon*. Labor is abundant and cheap. Soil erosion is a problem due to lack of crop rotation. Little fertilizer is used; mainly droppings of livestock are spread on fields to increase nutrients in the soil. Because they must be purchased, fertilizers are unavailable to most small farmers. (Ecology)

There are four major cereals produced in Ecuador: rice, wheat, barley, and corn. Corn is cultivated mainly in the arid highlands for both human and animal consumption. Rice is gaining popularity and represents the cereal of the future. Potatoes and manioc are two very important root crops of Ecuador, and they are grown almost everywhere. Production has more than tripled over the past 30 years due to improved technology. Sugarcane is a cash crop grown on the coast and benefits from fertilizers, mills, and machinery. Other cash crops such as bananas, coffee, and cocoa are exported from Ecuador for economic benefits. (Ecology)

As far as livestock, many small farmers raise livestock such as pigs and chickens. Most cattle are raised in the sierra but come second to food crops. The improvement of Ecuador's cattle industry has seen tremendous improvement with help from the World Bank (Ecology). Fisheries are being modernized under a 10 year World Bank funded program. Tuna is Ecuador's primary fish export, but production does fluctuate up to as much as 4,000 tons of fish per year. The shrimp industry is also growing, but is considered an export and is not consumed much by the people of Ecuador.

Most of the struggle with agricultural production is access to adequate technology. In areas with operating machinery, production levels are highest. Lack of capital is pointed as the cause, due to the overwhelming growth of agricultural production, especially with cash crops such as bananas and coffee, with increasing government programs (Encyclopedia of Nations). Education of proper farming techniques is also lacking, as crop rotation is not a common practice in typical small farms. The soil becomes eroded and loses nutrients at a fast rate (Agriculture and Economic). Edible fruits and vegetables grown in the soil therefore lack nutrients as well.

Economically, Ecuador is dependent on its petroleum resources, which account for almost half of the country's export earnings (World Factbook). Unemployment rates increase with the instability of Ecuador's economy due to the changes in oil prices. However, the GDP has stabilized with diversification

of exports (FAS). Labor is cheap and tough in an agricultural setting. Workers usually commit to an eight hour day, and the cost of living is quite low. Agriculture currently makes up about 28% of the employment in Ecuador, as it has decreased over the decade (Trade Economics).

Nearly 65% of Ecuadorians are low income and have limited access to food, much less imported products. This steers away countries such as the U.S. who try to initiate trade with Ecuador. Large supermarket chains such as La Favorita also prove to be a challenge as far as foreign investment. However, these chains provide access to food for peoples living in poverty (FAS).

The environment plays a major role across all aspects of agriculture. Natural disasters are a prevalent and critical factor as they destroy precious farmland and diminish nutrients in soil and food product. Reliance on singularly subsistence farming proves to be a challenge as farmland is destroyed and weathered. Soil, in general, is under stress in the sierra regions of Ecuador. The area is experiencing less rain and more drought and flooding. Thus, proper irrigation of farmland is extremely important. Seed conservation and availability have decreased as climate change affects biodiversity of key plant species traditional to the region. Soil fertility has a major effect on the output crop and nutritional content. (Agriculture and Economic).

Nutrition is a deep concern for Ecuador, as its staple crops do not supply sufficient nutrients and vitamins. Secluded peoples of the highlands will not have access to foods other than the subsistence crops grown in the area. Transportation is a growing concern as open-air food trucks do not transport food freshly. It is efficient and important to invest in roads and schools and extension of research to fix this problem (Ecology). Distribution and communication are equally as important as the adequacy of funds and farmland.

Even more worrying is the occurrence of malnutrition throughout Ecuador affecting primarily women and children as well as low income peoples. 62% of children are affected in indigenous areas (WFP). Malnutrition is identified by prolonged periods of hunger, weight loss, and stunted growth. Women breastfeed their children with natural milk and sometimes added supplements in the form of milk powders. Mean values for hemoglobin in the blood are classified as “low” in the sierra and lower on the coast of Ecuador, the difference being location. Vitamin A is also relatively low across the board in Quito and Esmeraldas (Ecology). 16% of children are born underweight and six out of ten pregnant women and seven out of ten children under one year suffer from anaemia caused by iron deficiency (Prisma).

Iron deficiency is one of the world’s large-scale nutritional problems; international organisations estimate that anemia caused by lack of iron affects between 20-50% of the global population. Ecuador provides food supplements to decrease iron deficiencies in women and children. As a result, the rate of chronic malnutrition has decreased. The current government has successfully dropped the rate 7%. This is an important change in the historical rate of decline of malnutrition and its harmful effects.

Ecuador is in a ‘young’ country, where 13% of the population is aged under five years old. For example, in Chimborazo province which has a high indigenous population, the malnutrition rate reaches 44% (The Prisma). Currently, Ecuador invests 8.3% of its Gross Domestic Product in the social sector, which benefits the people of the nation. As a result of these investments, poverty rates have fallen. This exemplifies the beneficial and successful role the government has played in helping eradicate malnutrition. (The Prisma).

Population growth can increase the prevalence of malnutrition, as more people are attributed to less quality food available. Crowded villages also increase unsanitary measures associated with farming and the production of food. Water scarcity is a problem in Ecuador as droughts cause withering of crops and

seasons without food. Irrigation systems must be engineered and established to ensure proper water is getting to the people and their food.

Aliméntate, Ecuador (translated as Feed Yourself, Ecuador) is a burgeoning program in Ecuador that adheres to President Correa's claim to eradicate malnutrition in the next four years (2011). It applies food sovereignty in Ecuador by providing guidelines and promoting nutrition within cultural foods and social traditions. It is fitted to each local community by training residents to become health "promoters". The "promoters" learn food pairings for correct vitamin intake, how to reduce fats and sugars, and how to include local, fresh foods into their diets.

Specifically, Aliméntate provides pregnant women and young mothers with regular health appointments and check-ups for both them and their small children. It promotes education with regards to healthy breastfeeding as well as ensuring the child receives proper nutrition by intake of vegetables, fruits, and healthy fats.

By successfully achieving proper nutrition in children under 5 years of age, the program has also achieved success in creating a healthier generation. Aliméntate has reduced rates of anemia by 12 percent throughout 2010 in Manta, Ecuador (Medlife). A main component of its success is its acknowledgement of the cultural and social components to food. By promoting better health within these guidelines, Aliméntate creates a sustainable nutrition plan for the country for years to come.

This program could easily be scaled up to reach the entire nation. It also lessens the demand cheap imported foods which are high in starch content (like white flour). As described earlier, Ecuadorian farms do not use harmful fertilizers which could negatively affect the quality and nutrient content of crops. Imported foods are also expensive and fluctuate with the changing market (Medlife).

Communities are extremely important in supporting programs like Aliménte, not only monetarily but also person to person. People need to be aware of the problem of malnutrition and how it affects their life and their nation. They must take the step to volunteer to be a spreader of information and healthy habits. However, they cannot do anything with regards to foreign policy. The Ecuadorian government must also step in and help by funding successful programs and creating policies which foster trade yet check that it does not hinder the prosperity of the Ecuador and the health of its people.

An international organization doing similar work is UNICEF. They created the "Best Buy" program in Ecuador, which, like Aliméntate, educates workers to promote healthy nutrition initiatives. They too focus on children under five years old by working alongside the school system and the Infant Development Networks. They have considered different ethnic groups as well as social and cultural understandings and traditions.

Each of the cities the program is run in provides an array of recipes to the people. UNICEF has also begun to focus on key micronutrients lacking in the Ecuadorian diet. Currently the "Best Buy" program operates in Quito, Riobamba, Manta, Cuenca, Saquisilí, Esmeraldas and Guamote. The program is a nonprofit, funded by donations from both international governments and private parties. In 2012 UNICEF's requirements totalled \$1.5 billion.

Solving the problem at a community level is where success will be shown. A typical farm family must keep producing what it is producing. Small, family farms are preferable to large scale farms from which pollution seeps into the air and water. Everyday citizens of the community must be educated as to the most beneficial nutrition plan for their families and friends. The Basic Support for Institutionalizing Child

Survival (BASICS) project achieved success, like UNICEF and Alimentate, by being based on a small-scale community level (World Bank).

Education regarding soil erosion and protection of natural resources is also very important. Existing government incentive programs could encourage the bettered treatment of soil and seed plants. GMOs are an option regarding grasses and nutrients for animals, as protein is especially lacking in the Ecuadorian diet.

However, there are present barriers to the achievement of education by the indigenous peoples of Ecuador. A large perspective of this is gender equality among communities, specifically social norms. Young girls are barred from going to school by being required to stay home and take care of the family. It is also not considered important or productive for women to be educated. For example, in Ecuador's rural areas, 48% of indigenous women and 32% of indigenous men are illiterate, compared to 18% of non-indigenous women.

Education programs to benefit communities will not be possible without the aid of the government. Funded programs will allow growth of community and overall health. The nation will be more prosperous and function smoother. The economy will grow with increased exportation of agriculture. Stemming from Maslow's hierarchy of needs: if health is not met, then one cannot reach his or her full potential. Ecuador has potential to be a great agricultural nation with diversification from their oil economy. The small farm family must be supported, and with it, entire communities.

However, the government has seen some trouble in providing funding for these types of projects. The political landscape has historically experienced cycles of instability (Global Edge). However, current president Rafael Correa has seen sustained popularity since his first election in 1979. Due to Ecuador's unstable petroleum economy, the government has a hard time funding programs when the economic conditions are bad. Ecuador needs to decrease its dependence on oil and diversify its economy in order to become more prosperous and also in order to benefit its own people. (World Factbook).

Education spreads as well with funded programs, allowing communities to make intelligent decisions with regards to the health of their loved ones. When people are making living wages, they will be able to purchase and enjoy foods from Ecuador of the highest quality, establishing their health and wellness. Agriculture, education, and malnutrition must be linked to solve the problem. Without specific goals that purpose agriculture to reducing malnutrition, the problem will not see any progress (Elder).

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