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Puerto Rico, Food Quality

**How Ancient Taino and Modern Agroforestry Practices Can Feed Puerto Rico**

Puerto Rico is a U.S island territory in the Caribbean Sea that’s been facing problems with the quality of their food. It's a problem I’m always reminded of when I visit my family on the island. Thus, I feel it’s only right that I write this paper about it. Puerto Rico has a total population of 3,057,311, with 93.6% of people in urban areas and 6.4% of people in rural areas (CIA World Factbook). In Puerto Rico, 22% of its land is used agriculturally, with 6.6% being arable land (CIA World Factbook). The average farm size in Puerto Rico is 59.3 cuerdas (a cuerda equals 0.971 acres) (USDA). Puerto Rico’s main crops are plantains, bananas, and other tropical fruits. Puerto Rico’s primary source of income comes from manufacturing, with the island making $48 billion in 2022 (Financial Oversight & Management Board of Puerto Rico). Puerto Rico has a local government with three branches but it still takes orders from the federal government in the mainland U.S, similar to the states.

The average family size in Puerto Rico is 3 people; 2 parents and their child (Name Census). Houses in Puerto Rico are usually one story and constructed from cement to help prevent frequent hurricane damage. Typical ingredients to cook with are the following: rice and beans, plantains, yuca (cassava), sweet potatoes, achiote, yautía, bananas, pork, and fish. Most of these foods can be found in outdoor markets, supermarkets or, sometimes, grown in the backyard. The median Puerto Rican household makes about $24,002 a year, according to Income By Zip Code. This is lower than Mississippi, the poorest state in the U.S, whose median household income is $52,985 (Income By Zip Code). While families have access to public education, it’s by no means perfect. In short, “In 2022, 36% of fourth graders and 26% of eighth graders in the states were considered ‘proficient’ in math…by comparison, in Puerto Rico, so few students made the cut in either grade that the percentages rounded to zero” (Cardoza). Puerto Ricans do have access to health care, but the quality can vary from municipalities (Expat Financial).

The problem in Puerto Rico is the recent Americanization of food. The Standard American Diet, or SAD, is characterized by “ultra processed foods, added sugar, fat and sodium” (Dan). Most of these foods in the Standard American Diet are convenient and taste good, but at a severe price, “Nationally, 41.9% of adults (in America) have obesity. Black and Latino adults have the highest obesity rates at 49.9% respectively” (Farberman). In the times of my grandparents and great-grandparents, many people ate the traditional Puerto Rican diet, which includes vianda (a mix of starchy root vegetables), plantains, beans, and rice. Many of the foods here take inspiration from the indigenous Taino diet. Meat wasn’t eaten at the rate it is today, and meat options were chicken, fish or the occasional pork. Foods like vianda are rich in fiber, vitamins, minerals and antioxidants, they also boost gut health and lower the risk of heart disease and other illnesses (Luz Colón). Nowadays however, “The island imports 80% of what it consumes, leaving local production more behind each day” (Nagovitch). And as it turns out, the food that’s being imported isn’t of the most healthy variety. “As a result, the Puerto Rican diet-particularly that of Puerto Rican youth-has become quite Americanized” (Marcus). American goods and eating habits are making their way into the island, changing the way Puerto Ricans eat. Now, more people choose to eat fast food for convenience or highly processed food because it's cheap. When I interviewed my cousin on the island he had this to say about the current state of food on the island, “...the culture of our healthy food is being forgotten because of fast food…mofongo (traditional Puerto Rican dish with fried meat) has become one of the most typical and consumed dish despite that it’s one of the most unhealthy dishes in the island”. Now, even traditional Puerto Rican meals are being influenced by American food culture, with unhealthier dishes that were reserved for special occasions or eaten in smaller quantities being consumed more frequently.

Another problem is that the current agricultural system in Puerto Rico isn’t strong enough to support the people in the island. In 2022, hurricane Fiona hit Puerto Rico. This ruined the already fragile island after Maria devastated it in 2017. The crop it hit in particular was, “...plantains and bananas, leaving with it 80% of everything that was planning to be sold for the next few months” (Nagovitch). Because of these massive losses, the island needs to rely on imports more, worsening the problem. To make up for the losses, farmers price up their goods, which prompts people to buy the cheaper imported ones. I asked my aunt what she thought about local produce and she said the following, “Eating healthy is costly, common people on the island have a hard time finding healthy food and what they find is limited. I believe agriculture will help Puerto Rico…however, if people aren’t motivated to buy locally grown produce then farmers don’t have a reason to grow the produce…”. Agriculture in Puerto Rico can’t handle competition from cheap imports. One farmer recounts his struggles of trying to get on the market, “There’s so many importations of plantains that they compete with us (local growers). Although there aren't fresh plantains being imported, there are pre-cooked plantains being imported, which poses a problem for us” (Nagovitch).

Frequent hurricanes also exacerbate the problem. Recently, Maria, Fiona and Irma have been detrimental to the island’s general well being. Not only has Puerto Rico been prone to hurricanes, but climate change has been making them way stronger than normal; this means more damage. According to the New York Times, “...after the hurricane (Maria) hunger rose even more. Broken roads made distribution of available food difficult” (Velasquez-Manoff). As stated before, hurricanes also ruin many crops and make people reliant on imports.

However, there are possible solutions to these problems. One solution is to take inspiration from our ancestors and increase production of vianda. By planting traditional root vegetables people can have the benefits of healthy produce while having it be relatively storm resistant. How? A group of researchers from CGIAR went to the Philippines to find out what crops would be resistant to tropical storms, like hurricanes. They found that “...although the typhoon snapped standing trees, sweet potato fields were barely damaged” (CGIAR). Overall, out of all the crops that survived, root vegetables were the most prominent. Additionally, because less crops were damaged, “Households that grew sweet potatoes were much less likely to have used their savings after the typhoon” (CGIAR). This could be a major win for Puerto Ricans, not only do tubers provide much needed nutrition, especially when food is so scarce in an event of storms, but because they’re grown underground, they’re resistant to the strong winds of hurricanes that seem to be becoming increasingly common.

Another solution is to revitalize agriculture in Puerto Rico. Puerto Rico has the chance to re-do its agricultural scene in a more productive and sustainable way, and one way to do that is through silvo-pastures. In its most basic form, silvo-pastures are mixing trees with grazing animals and crops. In 2022 a study on silvo-pastures in the tropics was done and the results looked promising. Results showed that, “...silvo-pasture systems are cooler, on average, than systems with no or low woody carbon density, and that cooling benefits increase with increasing woody carbon density” (Vargas Zepetello, et al.). This is extremely important because climate change is making these already warm regions hotter, so cooling effects can help protect vulnerable crops, as well as animals from overheating and getting sick. Trees on these pastures also take in carbon dioxide from the atmosphere and have the ability to sequester it, helping mitigate some effects of climate change. This incentivises farmers to leave trees on their property, which also reduces deforestation (due to farmers clearing native plants in order to gain more farmland). Consequently, because some of Puerto Rico’s crops are trees themselves, like plantains, coffee, and papayas, farmers can use them to both cool the pasture and grow more crops. Additionally, research found that, “The lack of a strong or consistent relationship between patch size and within-patch FET suggests that meaningful cooling effects are realized for even small contiguous patches of silvo-pastures” (Vargas Zepetello, et al.) This means that since there's no major incentive to having a bigger farm, farmers will feel less likely to cut down natural vegetation, especially since it’s been established that native vegetation helps crops.

Together these two solutions have been shown to elevate poor communities and provide fresh, healthy food, as well as strengthening the local economy. However there does come the issue of funding. Farmers can get grants to implement these practices. There are several open research opportunities available, like the CLUSA and USDA proposal narrative for Puerto Rico (Ambrook). This grant focuses on agroforestry as a means to help small, local farms produce more produce for the island itself, and do it in a sustainable fashion. At the time of this writing, the grant remains open for farmers who wish to enroll, so farmers in Puerto Rico need to be made aware of these opportunities. This can be done through educational programs for not just farmers, but for communities, so they can also learn about why this issue is important. Teaching can also be done in schools, as young students will learn how to feed themselves correctly and have the ability to persuade their parents in making an effort to choose healthier food.

Finally, grants alone aren't enough. The real underlying issue is Puerto Rico’s current status as a territory, or rather, the benefits it doesn’t get as a territory. Puerto Rico was in debt to the U.S, so in order to pay off the debt it had to make major cuts to many programs. The slashing of programs is responsible for the high teacher turnout, poorer health care practices, lower agricultural work and the privatization of the energy grid. Although it doesn’t seem significant, the energy grid has been continuously failing Puerto Ricans, especially ones in rural areas. My aunt has always had issues with having water & electricity in her home, and I vividly recall having to ration water for baths when I was visiting her. If people can’t even get access to electricity and water, how are they expected to cook meals that require preparation? One way to lend money to Puerto Rico is to get the U.S to ask the IMF for money, since Puerto Rico can’t do it because it’s part of the U.S. However, there are two issues with this plan. Firstly, since it’s the U.S asking for money, the IMF might not think it’s necessary to lend, since the U.S is one of the richest countries in the world. Secondly, the amount that might be sent may not be enough to do something substantial. Puerto Rico can ask for money from non-profit foundations like Bill and Melinda Gates, who place a focus on helping poorer countries with sustainability while lifting them out of poverty. The Bill and Melinda Gates Foundation does have funding for poor countries who want to commit to sustainable agriculture, so Puerto Rico checks the box. The ultimate debate as of now is whether achieving statehood will resolve these issues. Not only could Puerto Rico have more opportunities to participate in more grants regarding sustainable agriculture, but the territory as a whole would have the missing component: direct funding from the U.S federal government. If Puerto Rico becomes a state, the mainland U.S would have no choice but to recognize their status and actually hear from representatives. However, not all Puerto Ricans want or believe statehood will solve the current problem, and given the current state of affairs in the U.S today, it’s unlikely that they’ll be receiving statehood anytime soon.

# Works Cited

Acevedo, Oscar. “What Do You Think about Puerto Rico’s Nutritious Food?” Received by Suriana Acevedo, 7 Jan. 2024.

Cardoza, Kavitha. “In the 6th-Largest U.S. District, Natural Disasters Have Disrupted Schooling for Years.” *NPR*, 16 Aug. 2023, www.npr.org/2023/08/16/1193722562/puerto-rico-schools-education.

Central Intelligence Agency . “Puerto Rico.” *CIA.gov*, Central Intelligence Agency, 14 Feb. 2023, www.cia.gov/the-world-factbook/countries/puerto-rico/#environment.

Dan, Laura. “The Standard American Diet: What You Need to Know and How to Break the Status Quo.” *Fullscript*, 27 July 2020, fullscript.com/blog/standard-american-diet.

Editor. “The Foundation for Puerto Rico’s Economy.” *Financial Oversight and Management Board for Puerto Rico*, 18 Oct. 2023, oversightboard.pr.gov/the-foundation-for-puerto-ricos-economy/#:~:text=Currently%2C%20manufacturing%20is%20the%20largest.

Expat Financial. “Puerto Rico Healthcare System & Medical Insurance Options for Expats.” *Expat Financial - Global Insurance for Expats*, expatfinancial.com/healthcare-information-by-region/caribbean-healthcare-system/puerto-rico-healthcare-system/.

Farberman, Rhea. “State of Obesity 2023: Better Policies for a Healthier America.” *Trust for America’s Health*, 21 Sept. 2023, www.tfah.org/report-details/state-of-obesity-2023/#:~:text=Nationally%2C%2041.9%20percent%20of%20adults.

Income By Zipcode. “Puerto Rico Income Statistics - Current Census Data for Zip Codes.” *Www.incomebyzipcode.com*, www.incomebyzipcode.com/puertorico#:~:text=The%20following%20data%20are%20the.

Luz, Mayra. “Health Benefits of Root Vegetables +Recipes: Sancocho.” *Healthy Rican*, 3 Oct. 2022, healthyrican.com/health-benefits-of-root-vegetables-recipes-sancocho/. Accessed 9 Jan. 2024.

Marcus, Jacqueline B. “Puerto Ricans - an Overview | ScienceDirect Topics.” *Www.sciencedirect.com*, 2013, www.sciencedirect.com/topics/agricultural-and-biological-sciences/puerto-ricans#:~:text=Almost%20three%2Dquarters%20of%20the. Accessed 9 Jan. 2024.

Nagovitch, Paola. “Una Isla Que Solo Produce El 20% de Lo Que Come: El Gran Problema de Puerto Rico Con Los Alimentos.” *El País América*, 22 Oct. 2022, elpais.com/america-futura/2022-10-22/la-comida-importada-amenaza-la-seguridad-alimentaria-en-puerto-rico.html.

Name Census. “Puerto Rico Population and Demographics.” *Name Census*, namecensus.com/demographics/puerto-rico/.

“NCBA CLUSA USDA NRCS CSC Proposal Narrative – Puerto Rico Guide | Ambrook.” *Ambrook*, Ambrook, 21 Dec. 2023, ambrook.com/funding/ncba-clusa-usda-nrcs-csc-proposal-narrative-%E2%80%93-puerto-rico. Accessed 11 Jan. 2024.

Rodriguez, Yartitza. “What Do You Think about Puerto Rico’s Nutritious Food?” Received by Suriana Acevedo, 7 Jan. 2024.

United States Department of Agriculture. *Puerto Rico Agriculture Results from the 2018 Census of Agriculture Highlights*. 2017.

Velasquez-Manoff, Moises. “La Lección Que Los Huracanes Le Enseñaron a Puerto Rico Sobre La Autosuficiencia Alimentaria.” *The New York Times*, 21 Nov. 2022, www.nytimes.com/es/2022/11/21/magazine/puerto-rico-comida.html.

Zeppetello, Lucas R. Vargas, et al. “Consistent Cooling Benefits of Silvopasture in the Tropics.” *Nature Communications*, vol. 13, no. 1, 4 Feb. 2022, p. 708, www.nature.com/articles/s41467-022-28388-4, https://doi.org/10.1038/s41467-022-28388-4.