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Costa Rica, Sustainable Agriculture

Costa Rica: A Sustainable Agriculture Plan for the People

If one is a tourist, the country of Costa Rica appears as a bountiful, tropical paradise. Leaving bustling urban areas and heading deep into the rural valleys, a less appealing side of Costa Rica will be discovered: villages with houses made from scrap wood and metal clustered together, trash dumped in stinking piles of waste, and food insecure families depending on each other for survival. This is the side of Costa Rica travel brochures fail to mention. Hunger is prominent in these communities, and though Costa Rica's democratic government is taking measures to eradicate the suffering of the poor, they've not been able to eliminate the causes of rural poverty, such as lack of education, limited access to healthcare, scarcity of local jobs and income inequality. (Franco,ozy.com/acumen/the-country-where-happiness-and-inequality-go-hand-in-hand/88590) "Costa Rica" is Spanish for "Rich Coast", which is an ironic name if one considers the food insecurity and need of the rural poor who live there. The people need a solution to mitigate their hunger, and they need one soon.

Costa Rica is located in Central America, in the Isthmus of Panama. It is bordered by Nicaragua to the north and Panama to the southeast. The geography of Costa Rica is extremely varied; from mountains and valleys to shorelines there is an amazing array of microclimates and weather. Costa Rica has two major seasons, a rainy or "wet" season and a "dry" season. (costarica.org/facts/climate/) The sunny coast on the Caribbean sea is humid and baked by the heat, the average temperatures ranging anywhere from 86 to 104 degrees Fahrenheit. (costarica.org/facts/climate/) The "dry season" is generally the period of time stretching from December to April. The wet months typically last from August to December. The Central Pacific and Caribbean coastlines share similar climates, while in the north the province of Guanacaste has suffered from a pervasive drought and resembles more of a sub-saharan environment. The Central Valley section of Costa Rica is surrounded by tall mountains, which help regulate what the travel website Costa Rica.org says is the Central Valley's, "Perfect Climate". (costarica.org/facts/climate/) There the weather is usually warm and balmy, with temperatures ranging from 59-86 degrees Fahrenheit. The mountains the Central Valley is encircled by, however, tell a different story. The higher one travels up the peaks, the colder the air becomes. The weather can even near freezing in some areas. The mountains can also reach heights up to 13,000 feet. (costarica.org/facts/climate/) The warm breezes coming from the Caribbean Sea are forced upwards by the mountains, which cools them and makes rainfall. However, on the Central

Pacific side of Costa Rica, the air from the sea is blocked by the mountains and prevented from cooling and falling into the Guanacaste province. (costarica.org/facts/climate/)

Costa Rica has a population of a little over 5 million people with about 20% of the population at or below the poverty line (www.entercostarica.com/information/is-there-a-lot-of-poverty-in-costa-rica). Most of the poverty is in rural areas, where it is more difficult to find a job and have access to basic utilities.

A typical urban family consists of 3.5 people in each household, though in rural communities a family may have more than the average number of children. In some families, the head of the household is a single mother, who may also be caring for aging parents and extended family, as well as struggling to feed her children (Dyer). Poverty adversely affects those women in rural or poor communities who are most often forced to leave their children and dependants with little supervision at home in order to find a job outside of the community. Because the children may not receive the best support, supervision and care they need at home, they are more likely to leave school early which also limits their opportunities for employment and thus continue the cycle of poverty. (Amunian@ccs.ngo, crossculturalsolutions.org/blog/poverty-costa-rica)

Costa Rican families, commonly make their meals from fresh ingredients obtained from their local marketplaces. An average meal is “gallo pinto”, which is made of rice and beans (a common staple in their diet) (Laura, <https://www.enchanting-costarica.com/activities/costa-rican-cooking/>). Nearly 10% of the arable land in Costa Rica is devoted to growing commercial cash crops like cocoa, bananas, sugar, and coffee (<https://www.visitcostarica.com/en/costa-rica/general-information>). An average farm would typically be under 10 hectares or less than 25 acres.

The agriculture industry in Costa Rica bountifully provides for the export trade. Coffee has been a wildly successful business for Costa Ricans since it first originated in 1816, started by Father Feliz Velarde (Agudelo, thecostaricanews.com/agricultural-costa-rica/). That’s not to say that it’s the only successful food export — bananas and pineapples are popular as well. The majority of the undeveloped remaining land, which consists of verdant jungles and prolific flora and fauna, is set aside as national parks. These parks are hotspots for eco-inclined tourists. Besides tourism, commercial agriculture is the most important mainstay of the Costa Rican economy (<https://www.visitcostarica.com/en/costa-rica/general-information>).

In urban areas, the Costa Rican government has made healthcare low-cost and readily available to everyone. Access to good healthcare in rural areas is more challenging. Education for children is free and required, though children in rural communities often only complete what is considered to be three years short of formal schooling (<https://www.visitcostarica.com/en/costa-rica/general-information>) (Dyer).

Though the government of Costa Rica (a democratic free republic), is making a substantial effort to combat poverty in their country, more help is needed.

In response to the ongoing difficulties, I would like to propose a solution which I believe will alleviate Costa Rica's problems with food insecurity, as well as provide local job opportunities within the communities directly affected. This solution is based on combining the design principles and techniques of Permaculture (Mollison) with the resources and efforts of the local communities themselves.

I propose that each rural village or town with issues of food insecurity develop "community gardens". These gardens would make use of available public lands strategically located in the best public areas for a garden to provide the villagers with food. The most suitable places, I believe, are those located by either churches, parks, or schoolyards. These are common use sites. A volunteer permaculture (permanent sustainable agriculture) expert/designer would be invited to come to the community to advise and help the residents determine the best kinds of crops to grow in the specific climate and soil conditions of their village. The crops would further have to be cultivated from plants that can produce and replenish their own seed stock, preferably from non-GMO and organic seeds.

There would also need to be a shed or appropriate structure located near the "community garden" which would contain the tools and seeds necessary for growing food. The structure could be referred to as a "Tool and Seed Library" where gardeners could "check out" whatever tool or seeds needed. At the end of the growing season, rather than harvest all the crops for consumption or sale, some of the plants would be allowed to fully mature so seeds could be harvested from those plants and the seeds returned to replenish the seed library.

The project would not be without its challenges. The permaculture volunteer designer may need to teach growers how to save seeds. In addition, the geographic area the villagers live in could be so polluted that new soil and compost would initially have to be brought in or locally made to serve as a clean growing medium for the garden plots. And if the ground the villagers live on is too contaminated, raised beds may need to be built as a substitute planting and growing location. There may also be an issue with access to water, especially during the dry season or in the dry arid conditions of the Guanacaste province. Harvesting rainwater from the roof of the Tool and Seed Library shed which can be collected and stored in rain barrels and later redirected to the gardens to water the plants is one possible solution to help irrigate the gardens. There are other permaculture methods to manage water scarcity issues. For example, permaculture uses design techniques such as swales, berms and hugelkultur to deal with a lack of rainfall; other design features when properly implemented can address too much rainfall. (Lawton)

Hugelkultur (hill cultivation) is based on an ancient European alternative low water planting method where biomass material like chopped limbs and underbrush or decomposing tree logs are piled up and covered with soil. Plants sown on the hugelkultur surface are nourished by the nutrients released from the

decomposing logs. The logs also release moisture as they decompose and provide needed water for the plants during dry periods. Hugelkultur is an alternative to building raised beds in areas where the soil is contaminated. ([permaculture.co.uk/ articles/many-benefits-hugelkultur](http://permaculture.co.uk/articles/many-benefits-hugelkultur))

Permaculture swales are trenches which are bermed on the downhill side with the soil that is dug out of the trench. A berm, as defined by the online dictionary version of Merriam-Webster, is “a narrow shelf, path, or ledge typically at the top or bottom of a slope”. Swales are used to capture and redirect water along carefully planned routes. Swales that follow the contour of the land help to retain water and slow its dispersal as well as helping to prevent erosion of the soil. Swales are also an excellent method for catching rainfall and reducing storm runoff by directing and controlling where excess water is held, directing it into an “underground reservoir” (Amy, tenthacrefarm.com/permaculture-swale/) for later use.

Because of the variety of microclimates in Costa Rica and the particular needs and challenges of each, a permaculture volunteer will be an invaluable asset for the success of this project. Permaculture is growing in popularity and there are growing numbers of students and teachers who not only are being trained but also certified as permaculture designers. Well known teachers, to name a few, include Geoff Lawton from Australia, (who was trained by Bill Mollison, the originator of what is considered to be modern Permaculture), Paul Wheaton who offers Permaculture Design Courses in Montana, and Sepp Holzer from Austria who travels internationally to offer workshops that teach techniques and principles of Permaculture Design. I believe that newly certified permaculture designers will be anxious to build their portfolios and resumes by volunteering to help with this project and that there will be no shortage of willing participants. In fact, permaculture is already being practiced in the Guanacaste province of Costa Rica. (<https://permaculturenews.org/2010/03/12/letters-from-costa-rica-part-i/>)

Ultimately, the whole point of this project is to give people in need a sense of independence and an opportunity to escape from the vicious cycle of poverty. For example, if the growing season was exceptional, some of the surplus crops could be harvested and sold in the local marketplace to generate income for the grower as well as provide adequate sustenance for their families. Some of this potential profit could also be set aside to fund ongoing maintenance needs and repairs to the Tool and Seed Library, as well as helping to maintain the gardens. Local jobs may also be created from building the gardens and the tool and seed library structure. A seed librarian or committee of librarians will be needed on a part time basis to manage the seed and tool inventory as items are checked out and returned. A security plan to keep thieves from stealing or vandalizing the tools and produce may also be a means for a potential job to be created by the project.

The community of growers can also share the food among themselves to strengthen their community bonds and provide variety in their diets. Each person who is interested in the community garden, who is willing to be trained in seed saving techniques and permaculture principles like composting and water

conservation, and who demonstrates need, would receive a free garden plot of their own to cultivate. Individual plot recipients can choose whatever seeds they'd like to borrow from the seed library, as long as they are seeds that will grow well in that specific Costa Rican environment. The community garden would create a bond among the villagers, as they can share what food they have and exchange tools and labor in friendship during the process of growing their own food. Of course, there is always the fear that someone would take advantage of this "sharing and caring" situation by stealing tools, seeds, and food from the "libraries" and gardens. To combat this unfortunate possibility, a wise choice would be to have an honest discussion with the participants and brainstorm solutions with them that may include "stakeholder monitors" stationed at the shed and gardens at night. There is also the issue of replenishing supplies. If the tools used were eventually damaged beyond repair, I believe a plea for donations issued out to well employed Costa Ricans, or those who manage farms in the agriculture export industry, would be another way to replenish tools and supplies.

The Community Garden and Seed and Tool Library Project would be headed by nonprofit organizations in collaboration with permaculture designers, along with the government of Costa Rica. The Costa Rican government is in the best position to identify the areas and communities where the need is greatest because they will have access to local data and can also facilitate processing requests from rural villages who would need to file a request in order to launch this program in their communities. The project could initially be funded by donations and internet websites like GoFundMe and Kickstarter.

If implemented properly the Tool and Seed Library and Community Gardens would become self sustaining and self replenishing. That is the whole point of launching it — to be a sustainable system. If GoFundMe or Kick- starter contributors can make a lasting difference with a one-time donation, they will be more inclined to want to back this project. GoFundMe donations "depend on marketability" (Del Valle , theoutline.com/post/1787/the-people-gofundme-leaves-behind?zd=2&zi=oyeyxlnj) as well as appealing to future donors. Research done by Rob Gleasure and Joseph Feller, two business teachers at Cork University Business School, suggest that it's a personal approach that is the most successful. Donors are more drawn to campaigns with lots of pictures and text. (Del Valle, theoutline.com/post/1787/the-people-gofundme-leaves-behind?zd=2&zi=oyeyxj)

I am sure that a campaign for the Seed Library/Community Garden plan could be successful if photographs of the gardens and their progress, as well as a more personal view of the communities involved, would show how donations are actually being put to use. This would reinforce the donor's feelings of success. They have actually made a difference by donating to this campaign! It may be a tricky situation, but with the right assets and marketing, GoFundMe and other crowdfunding websites could definitely create the budget initially needed to implement this project.

I firmly believe this plan would provide a sound method for helping the food insecure of Costa Rica achieve self reliance and release them from hunger and poverty. It would also help improve the ecosystems in rural villages by making healthy soil, boost morale in otherwise struggling communities and provide renewable food resources the villagers can rely on. There are other challenges, of course, such as the dangers of theft and vandalism of the gardens and tools, but overall I believe that the community itself, once it takes ownership and pride in this project, can find solutions for mitigating those issues.

I truly believe this proposal could provide a solution to the epidemic of food insecurity. In fact, it would work not just in Costa Rica, but many other poverty-stricken places as well. I believe that a successful program in one country can provide a working model that will carry over to other countries who also struggle with issues of food insecurity. I hope you will seriously consider my plan to relieve Costa Rica of its hunger issues and help lift this nation's rural poor out of poverty.

References

- “About Costa Rica.” *Visit Costa Rica*, Costa Rica Tourism Board, 30 Oct. 2018, www.visitcostarica.com/en/costa-rica/general-information.
- Agudelo, Guillermo. “Agricultural Costa Rica.” *The Costa Rica News*, 7 June 2019, thecostaricanews.com/agricultural-costa-rica/.
- Amunian@ccs.ngo. “Breaking The Cycle Of Poverty in Costa Rica.” *Cross*, www.crossculturalsolutions.org/blog/poverty-costa-rica.
- Amy. “What is a Permaculture Swale: Irrigate the Easy Way.” *Tenth Acre Farm*, 14 May 2019, www.tenthacrefarm.com/permaculture-swale/.
- Bane, Peter. *The Permaculture Handbook*. New Society Publishers, 2012.
- “Costa Rica Climate.” *CostaRica.Org*, Costa Rica Travel Agency, 17 May 2019, costarica.org/facts/climate/.
- “Costa Rica's Education System.” *Costa Rica*, Costa Rica.com, 24 June 2015, www.costarica.com/relocation/costa-ricas-education-system.
- “Costa Rica: Government.” >> *GlobalEDGE: Your Source for Global Business Knowledge*, Michigan State University, globaledge.msu.edu/countries/costa-rica/government.
- “Costa Rica Population (LIVE).” *Worldometers*, Worldometers, 2019, www.worldometers.info/world-population/costa-rica-population/.
- Dyer, Zach. “More than 1.1 Million Costa Ricans Live in Poverty.” *The Tico Times Costa Rica*, The Tico Times, 22 Oct. 2015, www.ticotimes.net/2015/10/23/1-1-million-costa-ricans-live-poverty.
- Esri. “Costa Rica Average Household Size.” *Arcgis.com*, Esri, 24 Nov. 2013, www.arcgis.com/home/item.html?id=1495ef1e33c2449bb7b4235b74b193c6.
- Franco, Jules. “The Country Where Happiness and Inequality Go Hand in Hand.” *OZY*, www.ozy.com/acumen/the-country-where-happiness-and-inequality-go-hand-in-hand/88590.
- Gibson, Paula. “Poverty in Costa Rica Facts and Figures.” *The Borgen Project*, Borgen Project https://Borgenproject.org/Wp-Content/Uploads/The_Borgen_Project_Logo_small.Jpg, 25 Sept. 2018, borgenproject.org/poverty-in-costa-rica-2/.
- “Government: Costa Rica Embassy.” *Government | Costa Rica Embassy*, Ambassade Du Costa Rica, costaricaembassy.be/en/costa_rica/government/.

Hannes. "Family Values." *Costarica*, Costa Rica Information, 20 May 2010, costarica-information.com/about-costa-rica/people-culture-religion/culture/family.
"Healthcare in Costa Rica - International Living Countries." *International Living*, 2019, internationalliving.com/countries/costa-rica/health-care/.

Henfling, Ivo. "Everything about Utilities in Costa Rica - GoDutch Realty." *Godutch Realty ~ Real Estate for Costa Rica*, GoDutch Realty, 4 Dec. 2017, www.godutchrealty.com/costa-rica-real-estate-blog/costa-rica-utilities/everything-about-utilities-in-costa-rica/.

"Is There a Lot of Poverty in Costa Rica?" *Enter Costa Rica*, www.entercostarica.com/information/is-there-a-lot-of-poverty-in-costa-rica

Josh. "The Truth about Living in Costa Rica: The Good, the Bad, and the Muddy." *Viva Tropical*, 21 Feb. 2018, vivatropical.com/costa-rica/living-in-costa-rica.

Laura, Ana. "Costa Rican Cooking." *Enchanting-Blog: Amazing Travel News*, 2017, www.enchanting-costarica.com/activities/costa-rican-cooking/.

Lawton, Geoff, *Permaculture Design Course*, DVD series.

"Letters from Costa Rica – Part I." *The Permaculture Research Institute*, 12 Mar. 2010, <https://permaculturenews.org/2010/03/12/letters-from-costa-rica-part-i/>

Mollison, Bill, et al. *Permaculture: a Designer's Manual*. Tagari, 1988.

Morrison, Marion. *Costa Rica*. Children's Press, 2007.

"New Agriculturist." *New Agriculturist: Country Profile - Costa Rica*, Mar. 2011, www.new-ag.info/en/country/profile.php?a=1901.

O'Donnell, Shannon. "Cost of Living in Costa Rica (2019)." *A Little Adrift Travel Blog*, 4 Feb. 2019, alittleadrift.com/cost-of-living/costa-rica/.

Shapiro, Howard-Yana, and John Harrison. *Gardening for the Future of the Earth*. Bantam Books, 2000.

"6 Steps to a Successful Campaign." *GoFundMe Help Center*, 2018, support.gofundme.com/hc/en-us/articles/203604494-6-Steps-to-a-Successful-Campaign.

Staff, EasyBib. "The Free Automatic Bibliography Composer." *EasyBib*, Chegg, 1 Jan. 2019, www.easybib.com/style.

Streissguth, Thomas. *Costa Rica in Pictures*. Lerner Publications Co., 2005.

Teahupoo. "The Diet Of Costa Ricans And How It Keeps Them Healthy." *Singapore Travel Guide*, Street Directory, 2019,

www.streetdirectory.com/travel_guide/24531/food_and_drink/the_diet_of_costa_ricans_and_how_it_keeps_them_healthy.html.

"The Costa Rica President and Other Costa Rica Leaders." *CostaRica.Org*, 29 Nov. 2018, costarica.org/facts/president/.

"The Many Benefits of Hugelkultur." *Permaculture Magazine*, Inspiration Green and Permaculture Magazine, 30 May 2018, www.permaculture.co.uk/articles/many-benefits-hugelkultur.

Valle, Gabriela Del. "The People GoFundMe Leaves Behind." *The Outline*, The Outline, 23 June 2017, theoutline.com/post/1787/the-people-gofundme-leaves-behind.

"ZoteroBib." *ZoteroBib*, Corporation for Digital Scholarship, 2018, zbib.org/.