

Alannah Richards Nashua-Plainfield
High School Nashua, IA US Virgin
Islands, Climate Volatility

US Virgin Islands: Hurricane, Rain, and Tough Terrain Creating a Resilient Nation

One morning I woke up and wondered what I would have for breakfast. As a growl of hunger came from my stomach, the smell of cinnamon rolls drifted into my bedroom. This is one of my favorite breakfasts to wake up to. As I stumbled to the dining room I had a thought that shook me. I am blessed. In the middle of a world pandemic I am blessed to have food security, however others are not as lucky. Thousands living in the United States (US) Virgin Islands woke up today and did not have the luxury of cinnamon roll aromas drifting around their homes. My first world problems cannot stand against the daily struggles of United States (US) Virgin Island residents' problems.

1. Background of US Virgin Islands

The United States (US) Virgin Islands became a part of the United States territory in 1917. However, at this time the islands were primarily used for Navy purposes. After World War II, in 1945, the United States (US) Virgin Islands quickly became a tourist destination and remains so today (The World Factbook). For full time residents, this has become a major part of their lives as it helps keep their economy running well. In recent years, this has been an issue, as two Category 5 hurricanes (Irma and Maria) hit the islands, which destroyed anything in their paths, including the beautiful scenic views the island offered. Along with this, the hurricanes impacted 43,000 households throughout the island. Each household typically consists of two parents who raise two to three children (The World Factbook). Often, the homes in which they raise their young, are poorly built and can not support the needs of children. Food is dependent on imports and local fruits, making the lower income families struggle to get nutritious food. Most families in the US Virgin Islands have positions related closely to the country's tourism industry. As a result, business profits are seasonal and reflect a family's ability to earn a consistent income year round.

2. Geography

The US Virgin Islands are located about 50 to 60 miles East of Puerto Rico and consist of four islands, St. John, St. Thomas, St. Croix, and Water Island. Surrounding them are roughly 50 smaller, land formations that are called islets and cays. The four main islands serve many different purposes and all have specific characteristics that make them vital to the well being of the country. St. John is known for its natural beauty, landscape, and many national parks. St. Thomas is best known for tourism. Due to its natural beauty, St. Thomas attracts many individuals to come and visit, therefore supporting the economy. St. Croix is known as the agriculture island in the area, growing lots of food for the surrounding residence. This island is also the largest in size, measuring about eighty four miles. Finally, Water Island is the residential island in the area and is the smallest of the four. All four of these islands have mountainous regions containing limestone and rocky soil, making it hard to farm. Roughly one-fifth of the land on the islands combined is used for agriculture practices. However, on St. Croix, the mountains are clustered in

the northern half of the island, allowing agriculture to be practiced in the south. Due to the lack of available farmland, the full time residents rely heavily on imports to keep them sustained. Adding to their agricultural difficulties is a limited water supply. Sufficient water supply is a struggle that many face, however, in recent years, the government has built dams on both St. Croix and St. Thomas. They did this in hopes that it would ease some of the water supply demands in the agriculture industry. It has provided some assistance, however, it is still an issue frequently faced.

3. Dependence on Imports

Due to the mountainous terrain of the islands, growing enough food to feed all the citizens is not a feasible option. This in turn forces the islands to depend heavily on imports. Island residents can afford to import a large portion of their food due to high tourist income. Only two percent of the Virgin Islands' Gross Domestic Product (GDP) is made up of agriculture, while the rest is industry and services (World Factbook). Most food is transported to the island each year to support the life on the island. However, some foods are grown locally. The most commonly grown food in the US Virgin Islands is the coconut, followed by other tropical fruits. This helps balance the cost of imports and the local income. There is also a rum distillery that has been on the island since 1760, which helps support the island's import expenses. However, with this, the island has to import more sugar cane because they do not grow sufficient amounts. Many ports were built on the islands in order for their supplies to be brought in and distributed, making ports vital to the survival of the residents of the island.

4. Climate Volatility

Today, the US Virgin Islands are faced with multiple challenges as a result of the two hurricanes (Irma and Maria). When hurricane Maria hit the island, many homes, jobs, buildings, ports, and more were destroyed. Leaving little to no time to recover, hurricane Irma devastated the island too. Having two Category 5 hurricanes hit the island in two weeks time, left many wondering if and how recovery would be possible. Today the island is faced with millions of dollars of destruction on the islands. With this being said, recovery has been slow putting island residents in a tough situation. Because the island depends so heavily on imports, and the fact that the ports have been destroyed, people are struggling to get food to sustain their families. Along with this, the crops have been destroyed on the islands, making food even less available. People all across the islands are aware of the severity of the food crisis and have been working hard to open ports up. The crops that have been recovered are still struggling to be fruitful as fresh water is harder to come by on the island. Whatever fresh water is used has to be put to a specific purpose and never wasted. But this water issue is not new, it has been plaguing the island for many years. There are many issues that the residents of this island are forced to face as a result of the two hurricanes.

5. Solution: Vertical Gardens

On the islands there are few areas for growing food, but people still need to have access to food while the ports are closed. One solution to this is that families could each grow their own vertical garden. Vertical gardens are a great option for the US Virgin Islands for many reasons. One reason is that it takes up much less space than actual gardens, while still providing sufficient amounts of fresh food. Secondly, vertical gardens are relatively cheap. Families could purchase this technology for only \$150 (How Much Does It

Cost to Make a Vertical Garden). This price could be lessened too by receiving help from the government's FEMA (Federal Emergency Management Agency) program (Policy). The FEMA program is an organization designed to help countries in emergency situations or help countries impacted by natural disasters. Along with this, in the past local breweries, hotels, and restaurants have helped support the community in their attempts to become more eco-friendly by providing compost bins to families (Dunlap). This allowed families to gain access to nutritious soil and waste less. With the help from various different locations, it would help lower the price so that even lower income families would have potential to rise out of hunger. Finally, vertical gardens would be a great option for this location because it offers a reusable water system (Félix). For instance, a head of lettuce requires about one inch of fresh water per week (How Much Does It Cost to Make a Vertical Garden). In a field this would take thousands of gallons to sustain plants. However, in a vertical garden, plants would use recycled water, therefore greatly reducing the amount of water being used. Since the island already struggles with finding enough fresh water to support agriculture, this form of gardening could change the outlook of fresh water availability for the better. By having the capabilities to provide for themselves, locals would earn a new pride for their self sustaining land when vertical gardens are implemented.

Some of the main crops that could be grown on the US Virgin Islands include but are not limited to lettuce, kale, peas, peppers, and grapes. These foods are known for growing well in vertical gardens. Along with this, they all offer many nutritional benefits. According to the International Journal of Quality Research verticals gardens have been proven to be preferred over other forms of farming in Berlin, Germany. There, vertical gardens have been able to provide more nutritious food in less space. The same could easily be done in the US Virgin Islands. Not only will this help people be fed, but will also help them to be pulled out of malnourishment. Hunger could be greatly decreased in the US Virgin Islands if this technology was implemented in most households.

6. Solution: School Transformation

In addition to the vertical gardens, another solution could be food storage. On the island, St. John, there is a vacant school. For some this may seem irrelevant to solving world hunger, however, it could actually be a very key point to reducing it here. Over many years, this school has remained standing, regardless of the countless hurricanes and storms that have hit it, proving it is one of the most sturdy buildings in the area. With this being said, this school building could be a great location for a food bank. If people were to grow their own foods with a vertical garden, there would not be as high of demand for imports. This would save people a lot of money and let them be free to use it however they wanted. Since people would have "freed money", there could be a program to invest it into a food bank fund. This way the economy could still be kept up with imports still being brought in, and the people would have an abundance of food but kept in a safe location (the school).

Since the school has not been used in a few years, renovations would have to be made in order to make sure everything is sturdy and safe for people to use, and places for the food to be stored would have to be put in the classrooms and other locations throughout the building. The school would be able to hold imported goods that could be stored for many years allowing for people to have food security. If and when storms hit the island and force ports to be closed, residents of the islands would still have access to

food so they would not have to panic or be put in life altering scenarios. As the families came for food, it would be recorded what they were given so that people all across the islands would have a fair opportunity to get at least some food to support their families. The food would be distributed based on a few factors. One factor would be how much food was stored before the hurricanes hit. If there was plenty of food to feed the whole island for an extended amount of time, food distribution would be more generous, while if not much food was available, just enough food would be distributed to provide for everyone. Another factor would be the size of the family. The more kids a family has, the more food they would receive because they would need to be able to feed more people. More factors could come into place depending on each situation as the island faces the different trials.

7. Hunting Season

Although it may seem like an efficient plan to grow and produce fruit and vegetables it is not an efficient plan when the progress is destroyed by wildlife. In the US Virgin Islands numerous deer roam and graze wherever they please. Due to tight regulation on guns, residents are not allowed to shoot deer, thus leading to an increase in the deer population. Deer could be a potential problem to the growth of vertical gardens and overall success of reducing hunger in the US Virgin Islands. However, deer could also be a solution to the problem of hunger. Because deer are simply looking for food, vertical gardens would offer them easy food, destroying all of the work people put into the food. This would greatly decrease the effectiveness of implementing vertical gardens around the country. However, if the deer population could be reduced, residents would be able to grow successful gardens. In urban areas all across the country in town hunting licenses have been given out selectively. By implementing these same actions, the deer population would easily be reduced.

Along with this, deer that are harvested, could be used for protein. People around the island would be able to access protein from their homeland rather than be dependent on imports and such. This would be a very valuable asset to the community in a whole, but also be a good addition to the vertically grown produce. A wider variety of nutrition could be found in the US Virgin Islands. The season could be a few weeks out of the year and only a select few would be allowed to use bow and arrows to get the deer. A test on shooting accuracy and safety knowledge could be performed before the license was approved so that only the responsible would be allowed to shoot the deer close, or in urban areas. This has been proven to work in other urban locations with deer invasions. For example, in Ames, Iowa, local authorities have created a plan where a set number of deer licenses were handed out so that the residents could manage the deer. After multiple testing and practice days, residents could then go out and shoot a deer if they were approved and obtained a tag (City of Ames). This solution that was used in Ames, IA could also be applied in the US Virgin Islands.

8. Conclusion

Creating ways for residents of the US Virgin Islands to get food is vital for the survival and health of thousands. Current practices for receiving food are simply not good enough. They are not able to support the growing demands of life on these islands. By having more home grown foods and food shelters, people will be able to face the future without a doubt of where their next meal is coming from.

These people who were once fully dependent on outside locations for their food will now get to support themselves. These simple improvements to the lifestyle will drastically change their outlook on life for the better.

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