

Badra Kalil  
Towson High School  
Towson, MD  
Venezuela, Malnutrition

## **The Venezuela Food Crisis: A New Approach to an Old Problem**

Malnutrition has been an issue for as long as humans have been around. It is the cause of nearly 9 million deaths each year, and affects around 815 million people.<sup>1</sup> It is a problem that is prevalent all throughout the world, and impacts people in rural communities, urban cities, and everywhere in between. With so many different places and people being impacted, it may seem as though there is nothing in common between all the impoverished places—this is hardly the case. Research shows that the vast majority of malnutrition occurs in developing nations, so it only stands to reason that something be done to help these nations and people.<sup>1</sup>

As a large and developing nation, Venezuela was already very susceptible to the effects of malnutrition. In fact, many Venezuelans were impoverished long before the economy collapsed. The hunger crisis in Venezuela has always been there, but was hidden under the reason people know about Venezuela—oil. Oil takes such a large part of the Venezuelan economy that it provides the funding for many social programs and accounts for around 95% of their total exports.<sup>2</sup> In 1970, this was a good thing. Venezuela's economy was boosted by the high oil prices, and Venezuela became well-known as a country that was wealthy due to their oil.<sup>3</sup> However, the economic rise did not last long. Soon enough, oil prices began to drop, taking Venezuela's economy with it. This eventually led to the Venezuela Crisis—an economic collapse that was only exacerbated by their reliance on oil. Oil was no longer providing the same amount of money to the government, which caused the social programs to stop providing for those in need.

Research done in 2012 shows that the average Venezuelan family has around 4 people, and not enough money to support it.<sup>4</sup> With so many Venezuelans now in poverty due to the economic collapse, many feel they can no longer afford to buy the foods necessary for a healthy diet. Between December of 2016 and June of 2017 there was a significant drop in the percentage of people who could afford to buy eggs, meat, and even things such as cooking oil—all of which are foods that are considered quite basic to everyday life. This has led to many needing to eat “unusual” foods just to get by.<sup>5</sup>

Unfortunately, the problem is much more complicated than it seems. Around 90% of Venezuela's population lives in urban areas.<sup>6</sup> With the country's population being so unevenly distributed, it's not just that Venezuelans don't have enough money to buy food—there is a lack of food within the country as well. In order to sustain its population, Venezuela would have to produce over three times more food than it currently produces.<sup>7</sup>

As of 2014, only three percent of Venezuela's land is arable or being used for farming—meaning that in order to sustain its population, it would have to use all of its land incredibly efficiently.<sup>8</sup> Part of the reason for the cost of food being so high is that the government has limited the amount of imported foods, causing the price to skyrocket.<sup>9</sup> And as for the farmers local to Venezuela, they're in the same boat as everyone. One example of this is the story of Saulo Escobar, a farmer from Aragua, who lost 130,000 hens in one year.<sup>9</sup> The Venezuelan government has made it nearly impossible for him to buy new chicks or food for the existing hens.<sup>9</sup> His story is just one of many, which is why food shortages are so widespread throughout Venezuela.

As abundant as these shortages are, they still seem to impact one particular demographic the most—children. Young infants and toddlers are not getting enough food, and in turn, are dying of malnutrition. In 2016, 11,446 Venezuelan children died before they turned one.<sup>10</sup> In fact, many hospitals have stopped accepting malnourished kids, saying they don't have the resources to treat them.<sup>10</sup> Even infants who are born perfectly healthy can end up not getting the nutrients they need. One example of this is the story of a child named Kenyerber. He was born healthy, but shortly after he was born, his mother got the Zika virus.<sup>10</sup> She was no longer able to breastfeed and had to be hospitalized. Under financial strain, the family did as much as they could to feed Kenyerber, usually feeding him creamed rice or cornstarch, and whole milk.<sup>10</sup> Despite having food, his new diet did not provide him with the necessary nutrients, and he passed away at nine months old.<sup>10</sup> This is only one example of a struggle that many children and families have to face every day.

In the midst of this food crisis, the Venezuelan government has not done much to try to decrease the amount of malnourished people. That being said, there were some ideas put into place. Whether or not they will prove to be a permanent solution is yet to be decided. Currently, the Venezuelan government has implemented a food parcel system, where families are given a certain amount and variety of food at a very discounted rate.<sup>11</sup> While some say that they have been helped substantially by this new system, others think it could be another way for people to make money, and complain of being charged extra for their food.<sup>11</sup> The food parcels are imported from Mexico, and many are finding it hard to adjust to a new style of cooking, one without the foods they used to be able to buy with no problem.<sup>11</sup>

While these solutions may appear to be a simple fix, they won't last. Venezuela is not producing enough food for its population, and the parcel system isn't sustainable. More of Venezuela's land needs to be used for agriculture, and what is grown on those farms also need to be changed. In order to come up with a sustainable and permanent solution, newer, cutting edge solutions need to be explored. Genetically modified organisms, or GMOs, are the perfect solution for increasing the efficiency and harvest of the farms. GMOs function by taking a certain trait of a plant or organism and inserting it into the desired plant. Today, GMOs are used for things such as speeding up the growing process in corn, and making it so that certain apples won't turn brown.<sup>12</sup>

Genetically modified organisms can also be used as a source of food with a higher nutritional value. While using GMOs to solve hunger may seem like a long shot, GMOs are already emerging as one of the most promising solutions to malnutrition.<sup>13</sup> One example of a genetically modified organism is C4 rice. C4 rice is one of the GMOs that is already starting to wield results. C4 rice is a crop that is genetically modified to maximize photosynthesis, causing farmers to be able to harvest significantly more rice than before, and is predicted to significantly lower the amount of malnourished and hungry people worldwide.<sup>14</sup> Yet another example is golden rice, which is also a genetically modified form of rice. Its genome was altered to include genes from daffodils and certain viruses. This modification has made it so that this new form of rice can now produce Vitamin A—a vitamin that is the cause of almost a million children's death and many blindnesses.<sup>15</sup> By eating this new form of rice, you can prevent both blindness and death due to a Vitamin A deficiency.<sup>15</sup> Plus, as farming becomes an even more sustainable lifestyle, more and more people will want to go into farming.

The most prevalent problem that arises when GMOs are introduced are some ethical concerns. The biggest opponents to genetically modified foods argue that the effects of GMOs are largely unknown, and therefore could be harmful.<sup>16</sup> Many are also concerned with the big corporations leading these developments and making a large sum of profits by selling seeds that can only be used once.<sup>16</sup> In 2013,

when GMOs were beginning to gain more popularity, a plot of golden rice being grown experimentally in the Philippines, and was attacked by local farmers.<sup>17</sup> They argued that the genetically modified rice threatened “human health and biodiversity.”<sup>17</sup> While it may be true that there has not been as much extensive research on GMOs as there has been on foods that have been around for a significantly longer period of time, there is also no solid evidence that GMOs are bad. In fact, despite the general public’s opinion, the majority of scientists agree that genetically modified foods are safe for consumption.<sup>18</sup>

Since people still may have concerns, I would recommend distributing a pamphlet to people who are curious about GMOs. It would be a good way to educate people about them, as well as potentially get some more farmers to sign on to the idea. By educating people more about GMOs we’ll be able recruit more people as well as avoid potential negative reactions. As there is plenty of proof that GMOs can help people, they are clearly a good way to go about trying to end malnutrition.

My proposed solution is to encourage agriculture and expand the size of farms in Venezuela, and begin to produce genetically modified plants with a higher nutritional value.

There are two options here. One example of a good food to work on genetically modifying is corn. Corn is a staple in the Venezuelan diet—when they are unable to obtain food with high nutritional value, they usually end up with corn. Many also don’t have enough food for three meals have had to make do with what they have. They generally eating the same thing twice a day instead.<sup>19</sup> If they eat corn twice a day, it makes sense that it should be more nutritional.

Since corn is already a super common crop in Venezuela, it is an optimal crop to genetically modify.<sup>20</sup> Much of the corn is then used as cornmeal to make staple foods such as arepas, cachapas, and mandoca, among others.<sup>21</sup> If the corn had a boost in nutritional value, Venezuelans would get more out of their dollar, and would more regularly get important nutrients necessary for a balanced diet.

The second option is to genetically modify rice. This might be somewhat easier, as it has been done before, as I said earlier—golden rice, as well as C4 rice. Since these things have been done before, we already have a model for a possible GMO. Rice, as a staple food in tons of different cultures, also reflects the same importance in the Venezuelan diet. Not only is it in tons of different common foods, but it is also one of the main crops cultivated in Venezuela.<sup>22</sup>

As of right now, using GMOs as a way to help stop malnutrition in Venezuela is still a pretty experimental policy. It is worth considering using genetically modified rice as a starting point. First, you would slowly start to spread one of the already modified crops, like C4 or golden rice, and distribute it to farmers who are willing to try to implement this new system.

By using a crop that has already been genetically modified, Venezuela wouldn’t have to begin the entire process. It would take a decent amount of pressure off of the technological part of producing GMOs, since it already exists. Then, as farmers begin to use GMOs more and more, people will begin to use them more. This would allow for more experimentation, such as with corn. As of right now, the majority of corn that has been modified is simply to make it pest resistant, which means that trying to change the actual nutritional value of the corn might be more difficult. With support behind it, however, it’s possible that corn could help eradicate a ton of Venezuela’s hunger.

While still cheaper than other solutions, GMOs are also not free, meaning that another big obstacle could be cost. The Venezuelan government may not be in the best circumstances financially, so the

funding would have to come from an outside source. It is also worth mentioning that this cost will mostly rely on an initial purchase of seeds rather than a long-term investment. Once the initial cost is there, Venezuela will be on its way to a much more sustainable agricultural system. One possibility is to have international programs, such as the United Nations, pitch in to try to relieve some of the financial stress that would otherwise be entirely on the already declining Venezuelan government. Plus, several countries such as Brazil, Colombia, and the United States are currently trying to provide aid to Venezuela.—the only issue is that the Venezuelan government is not willing to accept the idea that the socialist system failed.<sup>23</sup> In April, the U.S. alone designated 16 million dollars to help Venezuelans fleeing to Colombia in an attempt to offer assistance where it's accepted.

Since Venezuela isn't willing to accept help or provide its citizens with the proper resources, many people are fleeing to Colombia to escape the current catastrophic climate in Venezuela. This means that not only is the problem prevalent in Venezuela, but it is now beginning to affect other countries as well. More than 15 countries are hosting Venezuelans because Venezuelans have become incredibly desperate for anything near a livable life. Once this new GMO system is implemented, however, the people that fled to these nearby countries will finally come back to Venezuela because they will be able to lead sustainable lifestyles.

Currently, Venezuelans are under a lot of stress. They are constantly having to fight just to barely make ends meet. People aren't able to buy foods with actual nutritional value because the country isn't actually producing enough food to sustain everyone. Farmers are also under a lot of stress, since they don't have the resources to keep their farms going. Fewer and fewer people are becoming farmers because it isn't an attractive lifestyle in Venezuela right now.

GMOs have the ability to solve all of the problems. By taking the genetics from other crops that have these vital nutrients and adding them to the genome of the corn or the rice grown in Venezuela, those crops that will be produced will provide many benefits to malnourished Venezuelans without costing them too much more. Plus, farmers will be able to not only feed the population, but also have a sustainable lifestyle. They'll have a farm that is no longer overworked or non-existent. This then encourages In fact, since GMOs are produced in such bulk these days, it will be very easy for the other countries and organizations to fund this country-saving project.

Families are constantly struggling to find food with nutritional value. The country doesn't produce enough to sustain its population, and imported foods are much too expensive for most to afford, leaving many with no food at all. Using GMOs to boost nutritional value in staple foods such as corn will prove very beneficial to the people impacted most by the food shortages. It is a cheap and efficient way of incorporating vitamins they did not previously have into their daily diets. By increasing the percentage of Venezuelan land used for farming and using that land to cultivate genetically modified plants, we can lower malnutrition rates in Venezuela substantially, if not totally.

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