

Abigail Hooge
Nova Classical Academy
St. Paul, MN, United States
Afghanistan, Malnutrition

Afghanistan: Using GMOs to Combat Malnutrition

Afghanistan is a Middle Eastern country with a climate consisting of hot summers and cold winters and a monsoon season. The geography consists of semi-arid steppe regions and mountainous regions which include subarctic terrain. Furthermore, the topography of Afghanistan includes landlocked mountains, deserts, gorges, high plateaus, and fertile river valleys (Country Reports, 2022). Afghanistan is 652,230 sq km in total. Only 58% of the land is currently cultivated; of that 48% is used as pasture and 11.8 % is arable land. This leaves very little room to grow food (Front. Environ. Sci., 2020).

The land that is currently cultivated is mostly used to grow exports such as various fresh and dried fruits, coal, and licorice sap (WITS, 2019). One of their primary exports is opium, a non-food crop, which is produced in large quantities (Afghanistan Opium Survey, 2019). Because most of the cultivated land is used for the production of exports, most of the food that the Afghan people eat has to be imported. This leads to a large dependence on other countries for basic necessities. This reliance on others for necessities is a problem because the current government of Afghanistan is the Taliban and other countries do not want to support the people of Afghanistan because they do not want to support the government and do not want to associate themselves with a known terrorist group.

Afghanistan has so little arable and cultivated land that, as a result, the average farm size for all crops is about four acres (LA Times, 2003). In comparison, the average American farm is 444 acres (USDA, 2022). The difference in size is because the United States has a lot more space than Afghanistan and because the amount of arable land in Afghanistan is much smaller than in the US. The smaller farm size in Afghanistan leads to a level of inefficiency that larger farms do not have. Small farms are split among many farmers, resulting in differences in farm practices. For example, one farmer may use sustainable farm practices, like crop rotation, to produce more food more reliably, while another might plant the same crop for several years in a row which leads to soil depletion. A better solution would be to have fewer, larger farms run by a few highly competent farmers who are educated enough to be able to efficiently manage bigger farms. One downside to farm consolidation is that it would mean that there would be fewer jobs available for those who lack education. Few people complete elementary school in Afghanistan which means that there is a lack of educated people, especially among the farmers. The farmers of Afghanistan would have to agree to consolidate their farms for this solution to work. There would have to be community outreach to get people to agree to consolidate their farms. Another issue is the decision of who would be the overseer of the farm. Ideally, the current farmers would vote on someone who they thought would be the most competent and would do what they asked with the food. There could also be a council made up of the farmers of the new, consolidated farms where they would discuss issues and problem-solve together for the benefit of everyone. Some of the previous farmers of the smaller farms would also be kept on doing labor and jobs around the farm so that the overseer can handle the business side of farming while others produce the crops using the standards that he sets. This would make the production of food a group effort and it would be a lot harder to have a monopoly on the food when there are multiple people involved in the production. Another thing to take into account is how the food is to be distributed. Each of the farmers would have to give up a part of their production to feed the urban population but if a system could be devised to calculate the amount of food each person needs at each stage in their life there could be enough food to give to everyone and make sure that they all have proper nutrition. One problem with this is that the Taliban is not likely to want to have the same amount of food as everyone else so they might not let the system be implemented.

Increasing farm size would have to be paired with improving the education system. Increasing access to education would mean that the people who are no longer able to be farmers could have access to different jobs. Even if the majority of people still work in manual labor they will have more opportunities in the types of jobs they can get because they have more of an education.

Part of the difficulty in feeding all Afghans stems from the large number of people that live in Afghanistan. Approximately 38.93 million people are living in Afghanistan 71% of which live in rural areas, 24% of which live in urban areas, and 5 % of which are Kuchis (The World Bank, 2020; Unicef, 2019). The Kuchis are nomadic people that travel around Afghanistan changing where they live consistently. *Afghanistan was an Islamic Republic run by a president and vice president before it was taken over by The Taliban Islamic Movement in August 2021*(Michigan State University, 2022). Today it is ruled by a totalitarian regime. A new government in Afghanistan means that the production of food and the laws about food production will change. Any changes could interrupt production flow, resulting in additional difficulty in producing enough food for everyone in Afghanistan. The Taliban has also made it so that over half of the people in the country are no longer able to work outside of the home based on their extreme religious ideas about women and their place in society. The Taliban regime has taken away women's opportunities for education which means there will be fewer people to help with the problems that Afghanistan faces in food production. Women will be working at home exclusively. They will cook and clean and take care of their children. This is not necessarily a bad thing, but when over half of the population is forced to work in the home, even if they have the skill, intelligence, and desire to work elsewhere, there becomes a group of people who are not allowed to live up to their full potential because of a lack of access to education and jobs. In addition, the country is deprived of diverse perspectives to solve critical issues. Another issue with making any changes under the Taliban's government is whether or not the citizens feel safe enough to be change makers. If they do not feel safe in their ability to effect change, then nothing will happen.

The typical family size in Afghanistan is about six people. These families live in a variety of conditions; some people live in mud huts while others live in mansions (SidMartinBio, 2020). The typical diet consists of foods like bread, noodles, and rice along with vegetables and occasionally meat; the food is prepared by the women of the household (Together Women Rise, 2022). The way that people get their food is from local markets which are a part of the culture around food. To prepare food, women use whatever pots and pans they have along with a rice pot or, if they are lucky, a pressure cooker. The food is cooked on gas burners. People do not have much in the way of household goods so they have to make do with what they have.

The way that families earn money can vary depending on education and social status. One of the most common jobs in Afghanistan is in agriculture, but there is a range of available jobs from business owners and teachers to lawyers and surgeons. However, these jobs require higher education which is something that most Afghans cannot afford. The pay range in Afghanistan is from 19700AFN (\$221.35)-348000AFN (\$3910.11) per month (SidmartinBio, 2020). Although there are available jobs, there are not always enough jobs for the number of people that need jobs in Afghanistan. The lack of ability to work for food means that entire families can go hungry. The lack of jobs directly relates to the high rate of food insecurity in Afghanistan.

Drought, floods, and conflict also make it very difficult for there to be enough food produced to feed everyone in Afghanistan. This leads to malnutrition and disease which are not very well treated because of the fragile and inaccessible healthcare system (Borgen Project, 2020). The healthcare system is also not affordable, which is a major challenge for a majority of Afghans because of the large percentage of people who are living in poverty. Because of the lack of good and affordable healthcare, the people of Afghanistan are more likely to die from disease and injury(Brookings, 2022). Along with not having good healthcare or access to food, access to education is limited with very few Afghans even finishing primary

school (Unicef, 2021). Most Afghans have very little access to basic necessities, with only 67% of people having access to clean water and very few having access to clean toilets, both of which are things that everyone should have access to (Unicef, 2021). Most Afghans have electricity and many have phones, but the electricity is not reliable (World Bank, 2019). Access to basic amenities got worse after the power shift to the Taliban's totalitarian regime because the government has neglected the infrastructure of Afghanistan (Council on Foreign Relations, 2021).

Natural disasters like drought are not the only things that cause food shortages in Afghanistan. Political unrest causes big problems in the flow of food production because it affects the farmers' lives and ability to work. Malnutrition is made worse by political instability and has become a humanitarian crisis in Afghanistan. Malnutrition is such a problem that UNICEF reports that 41% of children under five have their growth stunted because of the lack of access to food and only 12% of children from 6-24 months get proper nutrition (UNICEF, 2021). Unfortunately, the rate of malnutrition is not decreasing. Over half of the population suffers from malnutrition and there are no signs of a decrease in the near future. The number of people suffering from malnutrition is only increasing (MPR news, 2021). Malnutrition is increasing because of the high unemployment rate, famine, drought, and Covid-19. Covid-19 has added to the country's problems by causing global supply chain issues that impact Afghanistan's ability to get enough food for all of the people in the country. Afghanistan is highly dependent on imported food, so supply chain issues have compounded the food insecurity that the people of Afghanistan face. Also, with everyone staying home to prevent the spread of Covid-19, there are fewer people able to do their jobs and some families lost their main provider to Covid. On top of that, the healthcare system is fragile so people are not able to get the medical help that they needed. Previously planned improvements in the healthcare system was interrupted by the regime shift, meaning that it is even harder to get medical care than it was before (WFP, 2021). Malnutrition in Afghanistan affects urban and rural populations equally. The problem of malnutrition disproportionately affects children but it also causes issues for the rest of the population. One in three teen girls suffer from anemia and women often have trouble producing enough milk to breastfeed their children which not only causes their children to not get enough nutrients, but it can also cause psychological issues for the mother (NPR, 2021). Mothers are not the only ones that experience the psychological toll of malnutrition. Fathers experience a toll because they often cannot get jobs or their jobs pay so little that they cannot feed their children which can cause them to think that they are failing as parents and providers (NPR, 2021).

Some solutions that have been implemented in Afghanistan and other places to combat malnutrition are, the National Nutrition Strategy and Feed My Starving Children Food Program. The National Nutrition Strategy (NNS) focuses on getting food consumption and food safety to a healthy level before working on the underlying causes of malnutrition. One of the underlying issues that this program works on is the health care system. The program works on improving the healthcare system so that children and mothers can get help for health issues safely and efficiently. The program does work to identify and correct the underlying issues that contribute to malnutrition, but once the ten-year time period is over, the country has to attempt to sustain the program to keep its people fed with little outside help. Feed My Starving Children (FMSC) on the other hand, delivers packages of food to partner organizations that distribute them to families. Each package provides six quick and easy meals to prepare that are scientifically designed to halt and reverse the impact of malnutrition. While FMSC works on immediate food intervention, it does not directly work to eliminate the underlying factors and issues that cause the country to not be able to produce enough food to survive. Instead, they work with other organizations to help increase food stability over time. Both of these programs focus on food and, in the case of NNS, health care but the solutions that they provide are incomplete because they do not meet other basic needs such as clean water and sanitary toilets. For this reason, many different organizations are needed to help increase the standard of living in Afghanistan. Additionally, because the current government of Afghanistan is a totalitarian regime, organizations need to be willing to work with the government of Afghanistan to make

life better for the people. If there is not a willingness to be cooperative, no change will be able to be achieved because the government will not allow it.

Something that could help combat malnutrition is to institute sustainable farming techniques, such as consolidating farms to be more efficient or helping to plant Genetically Modified Organisms (GMOs) or specially bred plants that are more drought-resistant varieties of essential crops like wheat. Specialized crops that meet the constraints of the areas where they are grown in could include drought-resistant crops that are used in desert areas or crops that can grow in cold and high altitudes so that food could be grown high in the mountains. Ideally, the production of the GMOs would all be run by non-profit organizations that consist of plant and environmental scientists to work on producing new varieties of plants and troubleshoot any production issues. The scientists that work for the non-profit will work to ensure that any GMOs produced will not harm the delicate ecosystems that exist in the various Afghan climates. A non-profit organization would have independent oversight and could ensure that the majority of the funds would go towards the effort of helping the people of Afghanistan. Funding would be generated through donations, grants, and the selling of products either made by the people of Afghanistan or by artisans who work with non-profit organizations. The community in Afghanistan plays a crucial role in this plan because they are needed to do the farming and distribute the food. It is best to incorporate the communities as much as possible so that everyone feels like they can make a difference in their future and the future of their community. The use of GMOs is only a feasible solution because the Afghan government does not have any bans on the use of GMOs for food.

When including the community in the process of food production, it is crucial to consider the cultural norms that would contribute to long-term success. Some cultural norms to consider are the role of women and men within society. For Afghans women stay at home and do the cooking whereas men work to provide money for the household, this is especially true after the power shift to a totalitarian regime. To work within the cultural norms men would do the farming while the women are able to work at home to make products for the non-profit to sell. The entire idea of the project is to be sustainable. We want people to be able to sustain their farms and their food so that they can lessen or stop malnutrition. On a final note, a very notable issue that will have to be addressed is the existence of the Taliban. If possible, it would be best to work with any existing government for the good of the people. This means not working in a way that is polarizing or offensive. While the situation in Afghanistan is not ideal, and not all of the members of society are able to pursue the careers that they desire, ensuring everyone gets enough food to eat must be a top priority. After food security has been established, the community could work to solve other critical issues within their society.

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