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The Possibilities of Sustainable Agricultural Methods and the Bidoon Population in Kuwait

The Middle Eastern country of Kuwait is an economically stable country, however, it still struggles to produce crops on its own land. Despite capital produced by oil extraction, Kuwait continues to have issues regarding food security - especially for populations of discriminated Bidoon people - and relies almost entirely on food imports. This issue can be addressed by the implementation of hydroponic or aquaponic farming facilities and the naturalization of the Bidoon people, with the assistance of the Food and Agriculture Organization (FAO) and government or private investments.

Kuwait is a country of 4.4 million people, nestled between Iraq and Saudi Arabia on the Persian Gulf (Central Intelligence Agency, 2018). With a land area made primarily of desert that receives very little rainfall, Kuwait struggles to produce any food at all, utilizing 8.5% of its land to grow only 4% of the produce it needs (Analysis of hydroponic agriculture, n.d.). While Kuwait cannot produce enough food to feed its own population, it is still a largely developed country in its urban areas due to profits from oil exports. Homes are very high quality, modern-style, and subsidized by the government (Crystal & Sadek, 2019). Healthcare, access to loans, and affordable housing are available to all citizens and basic resources such as water, electricity, roads, and phones are available to a majority of the population. (Central Intelligence Agency, 2018). The issue of food, while very important, is largely hidden by the massive capital produced by oil exports.

Kuwaiti lifestyle and culture are becoming more similar to American culture, but are limited by access to resources such as food. Kuwaiti households consist, on average, of 5.7 people per household and living with extended families is common. Due to the lack of water, meals primarily consist of animals and their byproducts, and seafood is a large part of the Kuwaiti diet (Safari the globe, 2013). Foreign influence has also changed the diets of natives, as fast food restaurants are popular in large city centers. Due to a large number of foreign workers with oil companies, Kuwait has become a country that embraces Western culture but still retains some culturally conservative ideals (Crystal & Sadek, 2019). For example, many women still follow customs such as wearing a hijab in public, but practices are moving away from traditional to more Western and are evident in Kuwait's younger generation (Countries and their Cultures, n.d.).

Not considered in Kuwait's population statistics are the Bidoon people. The Bidoon are classified as stateless people by international groups, but illegal residents by the Kuwaiti government (Minority Rights Group International, 2017). Even though they lived in Kuwait at the time of its formation, they did not register as citizens when required, causing their entire population to be excluded from national statistics and all government support. Initially, the Bidoon enjoyed the same rights as Kuwaiti citizens and were considered legal residents, but after multiple terrorist attacks stemming from the Iran-Iraq War targeted Kuwait, their status was changed to "illegal residents" in 1985 (Motaparthi, 2015). Due to their exclusion, Bidoon families must live in slum-like communities bordering major cities where they suffer to find jobs and sufficient resources to survive. This has led to protests in the streets of large cities, which were met with tear gas, water cannons, smoke bombs, and a ban on all Bidoon demonstrations. Over 100,000 Bidoon people reside in Kuwait. Although they have made efforts to change their status and gain recognition from the government, they still face discrimination and the threat of food insecurity.

The reliance on imported food and a minimal amount of internal agriculture strains Kuwait's food security (Nations Encyclopedia, n.d.) to such an extent that Kuwait is only able to grow 1% of its food on

its own land utilizing traditional agricultural practices (Analysis of Hydroponic Agriculture in Kuwait, n.d.). With summer temperatures of over 42 degrees Celsius, a very sandy soil composition, and incredibly limited natural freshwater sources, agriculture is almost entirely restricted (Central Intelligence Agency, 2018). Severe climate conditions force Kuwait to turn to imported food, and they now receive 96% of it from foreign producers (Nations Encyclopedia, n.d.). While this does solve the problem for anyone residing within major cities, rural, impoverished communities cannot access these food sources (Reports, 2018).

Access to food can be a problem for the Bidoon people, who reside in rural areas and slums surrounding cities (Judkins, 2018). Lacking the financial assistance the government provides to citizens, the Bidoon struggle to pay their bills and feed their families (Minority Rights Group International, 2017). Their troubles begin at birth, when children who are born to Bidoon families do not always receive a birth certificate, which is required for admittance to schools. In the hospital, parents are required to sign a record acknowledging their nationality, and in the case of the Bidoon, they are asked to either sign as a foreign national or non-Kuwaiti. With concerns of risking their future claims to citizenship, parents will refuse to sign the document and never receive the record of their child's birth, which is required to obtain a birth certificate (Kohn, 2011). Alongside this, citizenship is only passed on patrilineally, meaning a child will be considered Bidoon even if the mother is a Kuwaiti citizen. Without a birth certificate, Bidoon children are forced to be enrolled in private schools, which have a much lower quality of education and force the parents to pay fees, ranging between 860 USD to 1550 USD. For parents struggling to support their families, this can be an unjust burden.

The difficulty continues into adulthood, where their illegal status prevents the Bidoon from receiving employee benefits and often leads to discrimination within the workplace and community. The Bidoon also have trouble holding official jobs and obtaining business licenses, often forcing them to illegally sell goods and services (Constantine, 2013). The civil ID cards distributed to Kuwaiti citizens and legal residents are not provided to Bidoon, making it impossible to register as an employee legally. There are avenues to apply for citizenship, but the process is not transparent and Bidoon are not told why their application was denied (Motaparthi, 2015). Moreover, the Bidoon cannot challenge the decision in court due to a law established in 1990 that took away the power of courts to make decisions over citizenship claims. Instead of civil ID cards, Bidoon are given security cards, which protect them from deportation and provide basic services such as the ability to enroll in private schools and healthcare. This healthcare, though, is very minimal and many are unable to afford their medical costs. Some Bidoon, however, do not even have security cards, because they were rejected for the cards initially or were denied renewal. These Bidoon are unable to receive any government support and cannot travel outside of the country. Treated by the government as "second-class citizens," the Bidoon are a population deserving citizenship but are stripped of it by the Kuwaiti government (Constantine, 2013).

As Kuwait relies on food imports to feed its population, the first step to solve the crisis in Kuwait is to create a larger agricultural economy to counteract its foreign reliance. Encouraging traditional agricultural practices, though, would be impractical due to the subpar soil quality and lack of freshwater which, with the soaring temperatures of the Kuwaiti climate, would quickly evaporate. Even if traditional agricultural practices were efficient enough to be practical, there would still be the issue of finding a workforce to maintain these operations, as there is only a 2.2% unemployment rate in the country (Kuwait Times, 2018).

To solve the issue of food security in Kuwait, sustainable agricultural techniques must be considered. These techniques, while expensive to implement, can lower the costs of food and are more efficient than other practices. Hydroponics, aquaponics, and genetic modification are all viable solutions to the food insecurity in Kuwait, and each one has its own pros and cons. Building a new industry alone, though, would not be enough to sustain it with such a small available workforce, so new routes to hire employees

must also be considered when developing solutions.

The implementation of hydroponics in Kuwait can reduce the pressures of water use on farmers, shield crops from the harsh climate, and also allow for a larger variety of crops to be raised that would not survive in Kuwait unprotected. Hydroponically cultivated crops, protected inside a greenhouse, would not be affected by the severe Kuwaiti climate. In a country where water is scarce, hydroponic farming can decrease water use by up to 20 times and increase yields (Easyponic, 2016). Hydroponic agriculture, however, does require a very substantial initial investment, a wide knowledge of techniques, and more supervision than traditional agriculture but - due to the demand in a country where the food is needed - would still be economically viable (Siegel, 2018). There is not a very rapid return on investment associated with hydroponic farming, but if expenses are controlled and markets are favorable, the farms can pay for themselves in one to two years (Aquaponic Source, 2019). Moreover, if techniques are improved and crops are genetically modified, then the production of these facilities can multiply and costs can be reduced and, in turn, increase profits. This system of growing food, while a relatively new practice, would not be unfamiliar to Kuwaiti citizens. Hydroponic farming techniques are already present within Kuwait, in the form of home gardening and larger facilities, but do not produce at a scale needed to sustain the country's demands. Facilities such as Faisaliya Farms have proven that hydroponics are effective and accepted in Kuwait, and can serve a role in reducing foreign reliance on food imports (Faisaliya Farms, n.d.).

Aquaponics, while very similar to hydroponics, has its own unique advantages. Aquaponics offers the same ability to produce crops as hydroponics but is assisted by the growth of fish in nearby tanks or bodies of water. (Southern Regional Aquaculture Center, n.d.). By utilizing the water saturated with nutrient-rich waste produced by fish, plants are grown hydroponically in nearby greenhouses, which can filter water and return it to the fish tanks. The integration of the two systems creates a much more effective and sustainable system to grow a wider variety of nutrients for human consumption. Aquaponics shares similar drawbacks to hydroponics, such as high costs, the need for constant supervision, and a wide knowledge of practices, but can very easily increase profits with higher efficiency and production, often achieved by the implementation of genetic modification and technological advances, such as more efficient filters and control systems.

Kuwait also boasts prime locations with undeveloped land on which these facilities can be constructed. The many islands to the northeast of the Kuwaiti mainland offer a sheltered body of water for large facilities to grow fish, and the undeveloped archipelago provides a land area for the development of large hydroponic facilities. The high initial costs of a facility like this require a large investment to begin construction, so government and private investments would be needed. This funding would not be difficult to find, however, as there are large amounts of capital present within the nation, and previous economic development plans have allocated incredibly large amounts of money to do just this, but never came to fruition (Central Intelligence Agency, 2018).

Kuwait also faces a lack of freshwater, so a new source for irrigation must be explored (Central Intelligence Agency, 2018). Saltwater is readily abundant, but cannot be used to irrigate typical crops due to low salinity tolerances. Genetically modified crops with genes inserted that will give the crops an ability to resist greater concentrations of salt could address this issue. Genes from salt-resistant plants have already been inserted in numerous crops, including tomatoes, rice, wheat, and barley, and further improvements could lead to the development of a wider variety of salt-resistant crops (Roy, Negrao, Tester, 2014). The implementation of genetically modified crops would allow seawater to be used for irrigation, making water costs for these hydroponic or aquaponic facilities nearly nonexistent. It would also allow for the fish in an aquaponic system to be raised directly in the Persian Gulf, rather than in pools on a body of land. Furthermore, this allows for a greater number of options when deciding what type of fish to raise, as saltwater fish may now be integrated into this aquaponic system.

Both solutions require large amounts of maintenance and supervision, but the human resources to do so may be difficult to find when the unemployment rate is 2.2% and the primary industries in the country are associated with oil production. This issue, though, can be solved by the naturalization of the Bidoon people and the integration of educational programs within Bidoon communities which would serve as a pathway into hydroponics or aquaponics. With the help of the Food and Agriculture Organization (FAO) to establish training programs focused on sustainable agriculture, a steady stream of educated workers to these facilities can be provided. This program would offer official jobs to the Bidoon community and sustain a new industry in a country dominated by oil. The FAO already has an online learning platform in operation, and by including a sustainable agriculture training course on this platform, an easily accessible training program is available to anyone, anywhere. In tandem with this, programs in Bidoon communities would allow for the hands-on training of potential employees.

The naturalization of the Bidoon will come with some challenges, though. With 70% of Kuwait's population consisting of expatriates, Kuwait has implemented strict requirements a person must meet in order to become a citizen (World Population Review, 2019). In an effort to respect the citizenship of Kuwaiti natives, however, they have inadvertently neglected an entirely different population. Criteria for naturalization include having legal means of making a living and knowledge of the Arabic language (Kuwait, 1959). Both of these requirements can be difficult for a large number of Bidoon to meet, however, as legal employment can be hard to come by due to a lack of legal documents, and access to education can be restricted to those without birth certificates. This makes obtaining citizenship through naturalization incredibly difficult for the Bidoon people due to their circumstances.

For this reason, compromises for naturalization requirements must be made between the Bidoon and Kuwaiti government for the development of a new agricultural industry to be successful. There are currently programs intended to naturalize the Bidoon, but these are limited to a maximum of 2,000 per year, and even that capacity has never been met (Home Office, 2016). These programs also do not offer any incentives to the Kuwaiti government. With the prospect of supporting a new industry and boosting economic development, officials would be encouraged to naturalize more Bidoon so they can hold official jobs within the new agricultural sector. This development of a new industry would also further the Kuwaiti government's plans to diversify the economy of Kuwait, which they attempted to do in 2010, allocating \$104 billion towards the project in hopes of attracting more investors (Central Intelligence Agency, 2018). By returning to and expanding its past economic plans, Kuwait can establish itself as a wealthy, independent country.

The development of a new, advanced agricultural sector would make significant progress towards solving the issue of food insecurity faced by Kuwait, but it cannot do so on its own. With Kuwait's naturalization of the Bidoon, the help of international organizations such as the FAO, and private or government funding, Kuwait would be able to sustain its new industry, reduce its reliance on foreign food production, and also reduce discrimination and poverty within its borders.

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