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Kiribati, Malnutrition

Kiribati: Growing a Better Future with Sprouts and Quail

INTRODUCTION

Kiribati is an island nation in the Pacific Ocean that is in great need due to poverty and child malnutrition. According to UNICEF, 34% of Kiribati children suffer from stunted growth due to dietary deficiencies (Jellison). 54.6 out of 1000 children never make it to their fifth birthday (Jellison).

I have come up with an innovative solution that combines two little known foods that will make a big impact: *sprouts and quail*. When utilized, they can become a very powerful food system that adds much needed protein and fresh vegetables to the diets of the people of Kiribati. Once started, this system would allow Kiribati families to sustainably improve their food options on their own so they can build a better future and become more resilient. As the saying goes, “Give a man a fish, he eats for a day. Teach a man to fish, he eats all his life.”

COUNTRY AND FAMILY OF KIRIBATI

About 22% of the current population of 122,246 residents of Kiribati (“Kiribati Population”) live below the poverty line. Despite being provided more than \$27.7 million in aid by Australia in 2017-2018, one of the most pressing matters in Kiribati is still the lack of affordable, sustainable protein and fresh vegetables (Jellison).

An average of only 4 out of 10 adults in Kiribati are employed (Jellison). In addition, 45.9% of Kiribati’s population is rural while 54.1% is urban (Macdonald). Access to nutritious foods is limited and leaves many people malnourished (Jellison). Being an island nation that is dependent on imports also contributes to their malnutrition problems. In addition to these issues, another reason for their nutritional deficit is lack of awareness of healthy diets and nutritional needs. With an average income of only \$5 a day, acquiring the food necessary to sustain a well balanced diet is difficult for the people of Kiribati. This leads to a high mortality rate for children in Kiribati (Macdonald). Kiribati also has the highest rate of tuberculosis of all the Pacific Islands (Jellison). Due to Kiribati’s cultural preference for large families (“Kiribati - Marriage and Culture”), it is critically important for them to get the nutrients necessary for healthy child development.

Many countries already help Kiribati by exporting products to the country. Kiribati currently imports about \$3.12 million of raw sugar, \$3.1 million of rice, and \$3.03 million of poultry meat from various countries each year (OEC). Currently, Australia and Fiji are the leaders in exports to Kiribati, each providing 21.8% of all Kiribati imports. Kiribati also depends on foreign aid from other countries (Macdonald).

CHALLENGE AND IMPACT

So here is the challenge: *how can we improve the nutritional intake for the people of Kiribati, but also make it cheap and accessible for them?*

Combining two little known foods – sprouts and quail – in an innovative way will make a big impact. Sprouts are easily grown and the seeds can be cheaply shipped anywhere in the world in bulk. Quail are also small and require little space to raise. These two nutritional powerhouses are tiny-but-mighty, and when united, they could help solve the nutrition problem in Kiribati.

First, we have sprouts. Sprouts are a little known superfood that are compact and packed with nutrients. Broccoli Sprouts, for example, are a great source of nutrients. Broccoli Sprouts are said to be the most nutritious of all types of sprouts because they contain abundant amino acids, antioxidants, and many other vitamins and minerals necessary for a healthy diet (Belabre).

Due to their rapid maturity rate, different vegetable sprouts can be used to create a well rounded diet and provide variety. Alfalfa, radish, clover, mung beans, and peas all sprout the same way and are loaded with many nutrients such as Vitamins B, C, and K as well as copper and zinc. Sprouts can also help with the cardiovascular system, supplement bone health, and even lower the risk of chronic illnesses (Lang).

Although sprouts are a great source of protein, it would be even better for the people of Kiribati to have a source of meat. Quail, like sprouts, are not widely consumed as a food source and little known in many island nations. However, they could provide a unique way to supply protein in malnourished areas of the world, such as Kiribati. While some may say that quail are small and do not provide much meat, that is not the whole story.

According to the United States Department of Agriculture, quail and chicken have almost the same ratios of fat, cholesterol, and protein content per 100 grams. However, quail are significantly higher in other nutrients. For example, 100 grams of quail have 24% of the recommended daily iron intake, while 100 grams of chicken only have 7% daily iron (USDA). That is a big difference! Iron is a very important mineral that many in the world are lacking. According to the World Health Organization, about 80% of the world's population is deficient in iron and suffers from anemia. Anemia results from an iron deficiency and causes a shortage of healthy red blood cells that carry oxygen to the body's tissues ("Anemia").

By making these foods readily available in Kiribati, we can improve the nutrition of the foods available to the people who live there, especially children and the poor.

SOLUTIONS AND RECOMMENDATIONS

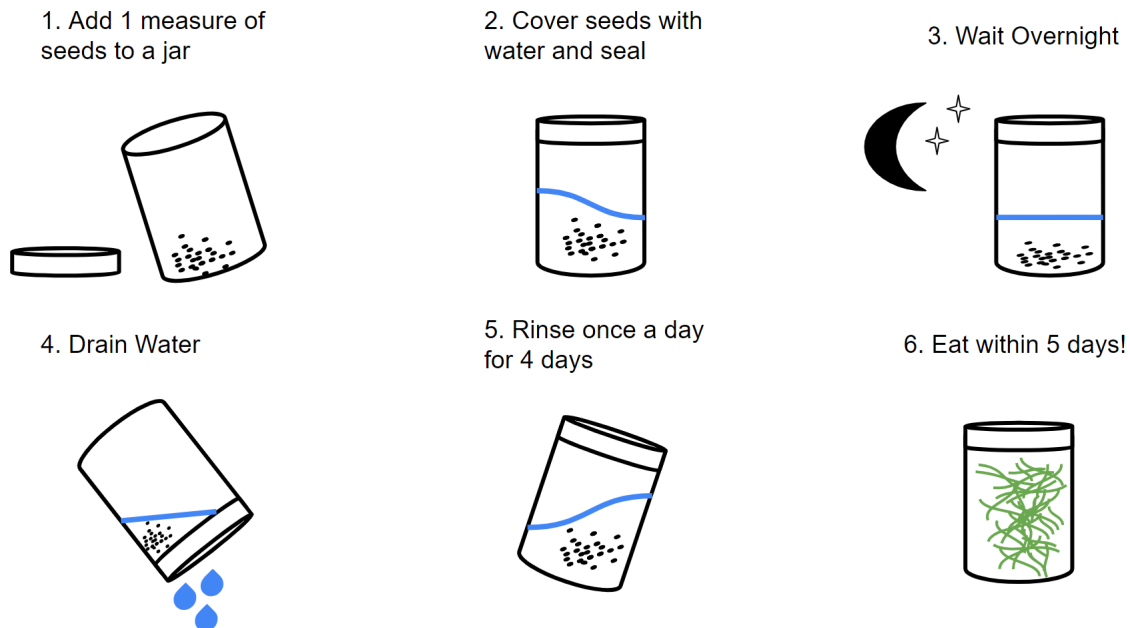
I have come up with an innovative system to allow individual families in Kiribati to grow their own sprouts and quail as an additional source of protein and nutrients. I propose that, with some initial funding, quail breeding and seed growing centers can be built in Kiribati. This would not only provide jobs, but it would bring the people one step closer towards self-sufficiency. The purpose of these facilities would be to breed quail and grow seeds to lessen the transportation cost of bringing seeds and hatchlings from other countries.

Sprouts are easily grown in a jar with a sieve as the lid. They do not require dirt to grow, and do not even require light. This makes them ideal to grow in difficult areas because they require only a small space and can thrive in the poorest of conditions while providing tons of nutrients (Belabre). Each variety of sprout provides different types of nutrients and matures quickly. Most are ready to eat after only four days (Lang).

You might think that because sprouts are so nutritious, they must be expensive. On the contrary, sprout seeds cost pennies per cup. Seeds can be purchased in large quantities in bulk and shipped to Kiribati until the people there can grow them themselves (through the growing centers mentioned earlier). This makes sprouts affordable for the people in Kiribati and easy to grow. Through international trade, the people of Kiribati can buy low cost seeds to replenish the initial supply. Sprout seeds are inexpensive to purchase, easy to ship, and tolerant of dark and dry storage containers.

All that is needed for each family to grow its own sprouts are a starter set of glass jars and a few pounds of seeds per family. The families in Kiribati are large, so if we assume that each family has five or six children (“Kiribati - Marriage and Culture”), each family should get a minimum of four sprouting jars. These jars can be used in succession to get a yield of sprouts spread out throughout the week rather than all at once. Since sprouts take about four days to grow, if the families start one jar each day, they will have a continuous supply of sprouts to supplement their diet. Bulk seeds can be purchased and shipped easily, and a distribution center can be set up to distribute the seeds and instruction pages to the residents in Kiribati.

My diagram below describes the basic process for how this would work:



Next, we will address quail. For this research, I am using Jumbo Japanese quail (*Coturnix coturnix japonica*). I noted earlier that quail are more nutritious than chickens. But do they require more care and work than chickens? No, quail are actually EASIER to raise than chickens! They only need one square

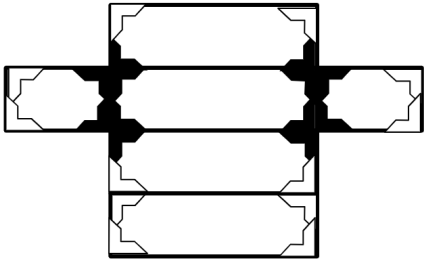
foot per bird, and come to maturity faster than chickens. Quail can be raised for meat because they grow quickly and therefore can be eaten sooner than chickens. The smaller size of quail makes meal planning and portion sizes easier to manage. Quail have a lifespan of about two years, and lay about an egg a day. Compared to chickens, quail lay at least twice as many eggs per year, over 300! Even though their eggs are a lot smaller, they produce about the same mass of eggs as chickens over the same amount of time (Bordessa). For such small birds, that is truly remarkable!

Now that we know that quail are good for a number of reasons, how do you raise them? Lucky for the people of Kiribati, quail either need to be in a very large enclosure, or a very small one. This is because the defense mechanism for quail is to shoot into the air when they are startled. This helps them get away from any predators. Therefore, quail need to be kept in some type of pen or enclosure due to their small size. They also do not mind smaller spaces, unlike chickens that require large areas to roam and scratch the ground. Quail should not be left to roam free when keeping them for meat or eggs because they will not survive well. Almost every other animal in the wild such as big birds, snakes or other predators will eat quail. Therefore they are best kept in small pens (Bordessa), which actually makes them more accessible for people with limited space or who live in apartments in Kiribati.

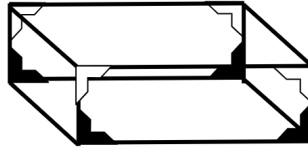
With some initial funding, perhaps provided by the United Nations or through international aid provided by Australia or the United States, live quail, sprout seeds, and all the other materials necessary for this project can be shipped relatively inexpensively to Kiribati. The only true barrier to this project is the issue of funding. There would be a substantial start-up cost to this operation, which can be difficult to supply. This can be overcome by gaining the support of a few non-profits, charitable donations, the Kiribati government, and their people. While there are few successful organizations already in Kiribati, with the help of The UN's Food and Agriculture Organization (FAO) and the Kiribati Government, this dream is possible. Along with donations from international organizations, the Kiribati government would play a crucial role in the success of this project and their cooperation and support is necessary. For instance, the government could give our project a tax break to make the necessary materials even more accessible for their people. To make the biggest impact, ordinary citizens would need to support and encourage their government to approve this project. Local involvement would be the backbone of this operation by training the residents of Kiribati to become experts who can teach others and eventually run the distribution centers.

In Kiribati, distribution centers can be built to sell the materials needed to the people of Kiribati. Eventually, these facilities will be upgraded to breed the quail and grow the seeds locally, which would make the materials even cheaper for them and allow them to become more self-sufficient. The materials that would need to be shipped would include seeds, jars, quail, quail pens, and quail feed. The quail pens can be cheaply made here in the US and then shipped to the distribution centers in Kiribati. Quail can also be shipped ready to raise, and then sold to the different homes once they set up the pens. Once established, the quail population in Kiribati will grow. An instruction page can be easily made and distributed along with the pens to clearly show how to care for them. Below is an example of a manual that can be added to the kits:

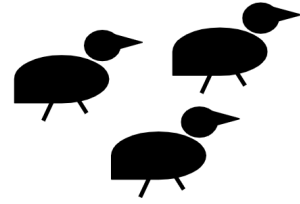
1. Lay out cage assembly



2. Connect the matching corners to form a box



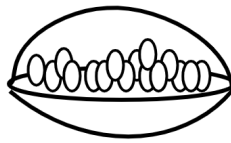
3. Add Quail



4. Feed measuring cup full of feed every day



5. Harvest eggs to eat when you see them



6. Quail can be harvested for meat once they start laying eggs. You can keep them for the eggs or the meat.

CONCLUSION

What does all this mean? When these two tiny-but-mighty foods are combined, they create a very powerful food system that can add many nutrients and diversity to the diets of the people of Kiribati. The materials could be shipped to Kiribati using some of the distribution networks already deployed by other countries. Rather than only sending direct aid to Kiribati, it would make a bigger impact if the world would teach the people of Kiribati how to grow their own food so they can build a better future and become more resilient. The best intentions go into sending aid, but direct aid can make countries like Kiribati reliant on importing foods rather than knowing how to sustain themselves. Citizens of Kiribati could be trained as experts to run the distribution centers which breed the quail and grow the seed. If the principle of local sustainability is applied to the places that need help, we can teach people and help them in incredible ways that make a bigger impact than just sending food and money. Sprouts and quail are just the start of a new way of helping people. I believe this solution can help the future of the world, one little sprout at a time.

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