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Philippines, Malnutrition

Philippines: The Incorporation of Crayfish for the Prevention of Malnutrition

The Food and Agriculture Organizations of the United Nations, otherwise known as FAO, is a specialized agency for food nutrition and other agricultural related fields such as forestry and fisheries. Their global vision is to free the world from hunger and malnutrition by ensuring sufficient food supply, managing natural resources, and using sustainable practices which encourage agricultural practices (FAO in the Philippines). They supply help to developing countries in return for a small portion of the prospect back. For example, the FAO has provided management of funds for the government of the Philippines for over four decades and in return are supplied land for a military base.

The Philippines is made up of various groups of islands off the shores of Vietnam and contain a variety of bodies of water including lakes, rivers, and bays. The Philippines is also very rich in their natural resources which include fertile soil, diverse plants, miles of coastlines, and mineral deposits (About the Philippines). While it has many resources, it is a developing country dealing with manual labor as its primary source of planting and harvesting crops as well as limited agricultural education on rotating and multi-cropping. It has little to no technology and very little resources to acquire it due to its average technology. For example, it has technology such as elevators and air-conditioning, but has limited construction education allowing for insufficient train systems and building plans. In 2018, an average family in the Philippines contains an average of 4.4 people per household (Republic of the Philippines Philippine Statistics Authority) with an average income of 313,000 Philippine pesos (Republic of the Philippines Philippine Statistics Authority and Dennis S). However in 2018, the "bottom 30 percent income group spent 58.2 percent on food" while the "upper 70 percent income group [only spent] 39.5 percent" (Republic of the Philippines Philippine Statistics Authority and Dennis S). To put this in perspective of how poor the Philippines are, the United States only spent about 9.5 percent on food including food at home and food away from home (USDA and Morrison). Most of the population live in rural areas and provide for themselves by farming. Their main crops include rice, corn, tobacco, coconuts, sugarcane, bananas, pineapples, and mangoes. Rice is one of the major crops of the Philippines and accounts for forty-six percent of their calorie intake and thirty-five percent of their protein source of energy and nutrients (Bordey). Since it is one of the most important parts of consumption, rice is known as their staple food as it provides the traditional diet, but it lacks in major vitamins.

To fix their vitamin deficiency and balance their diet to a healthier lifestyle, rice must be changed. The Philippines has already been introduced to SALT3 (Sustainable Agroforest Land Technology). This program is a development of a current system made for strenuous terrain known as SALT which is Sloping Agricultural Land Technology. SALT provides soil conservation and food production methods which allow for crops to be grown in between lines of nitrogen fixing trees and shrubs. They are planted close together for the benefit of sheltering other crops. This has already occurred in a SALT3 farm in Kinuskusan, Bansalan which is a province of Davao del Sulfur, Philippines. This farm introduced crops such as Flemingia macrophylla, Desmodium rensonii, and Indigofera anil to fill in between the trees and shrubs (Torr). SALT3 is set up so a farmer can harvest year round to where he/she can have an income all month. SALT3 also requires an annual rotation of certain crops. For example, if cereal were planted previously, then the next cycle needs crops such as peanuts (Torr). The rotation of these crops provides the soil to regenerate its properties taken from the previous crop produced which avoids the problem of infertile soil. In addition to planting in between trees and shrubs, multi-cropping is also possible. For instance, in the same row a farmer can plant corn and lanzones, which resemble a grape. This allows for better dieting for the Filipinos. While the program is slow, it shows potential for growth and has a beneficial impact on the Philippines' society.

Programs such as the SALT3 are used by farmers to provide their families with a variety of foods as most Filipinos; especially their children lack nutrients, vital for growth. The State of the World's Children: Children, Food, and Nutrition, a portion of UNICEF, inspect issues of children malnutrition and new perspectives on evolving challenges (The State of the World's Children 2019). It revealed that one in three children under five years old either are stunted for his/her age or will be stunted later on (UNICEF: Many children and adolescents in the Philippines are not growing up healthily); the other "two thirds are at risk of malnutrition...because of the poor quality of their diets' (The State of the World's Children 2019). In addition, a tenth of adolescents in the 2019 investigation were overweight due to an insufficient diet (UNICEF: Many children and adolescents in the Philippines are not growing up healthily). While indifference, both conditions are the result of inadequate diets. These children often have disorders of Protein-energy Malnutrition, Vitamin A Deficiency, Iron Deficiency Anaemia, and Iodine Deficiency Disorder (Karger Publishers). To help fix this problem, a new crop must be added that lacks fat, but provides vital nutrients such as protein and iron; one option is crayfish which holds the vital nutrients of "14.3 grams of protein" per a single three-ounce serving and B Vitamins such as Calcium, Iron, Magnesium, Zinc, and Phosphorus (Gray). These Vitamins would give the children, adolescents, and adults of the Philippines a more efficient, balanced diet as Vitamin B provides healthy diets, growth of red blood cells, and reduces the number of birth defects.

While adding new crops is spacious, implementing crayfish would not be a hassle. The Philippines, who is running out of farmland due to industrial and urban growth, would not have to provide more room for crayfish as long as it follows Louisiana's process. Louisiana multicrops crayfish with its rice plants. To begin farmers plant rice in early March and April; seed crayfish then are introduced when the rice is grown in about two inches of water and has grown to where it is thick enough to have a canopy, providing shade and allowing for the water to be cooler. The option for wild crayfish is open, but is a time absorbing job. The best crayfish to start a farm are the seed crayfish which are found in the South Central United States (Gaille). Louisiana and the Philippines have similar weather and barometric pressure. The crayfish depend upon barometric pressure changes to survive; since the Philippines is tropical all year, they often have a low barometric pressure, which equals lots of rain. As spring turns into summer, the water temperature rises, resulting in the crayfish using their natural instinct to burrow into the ground. In July the rice field, then needs to be drained so that after the rice matures it can be harvested. When summer turns into fall and rice has been harvested and temperatures have cooled, the fields are flooded again. The decline of temperatures and reinsert of water will cause the crayfish to reemerge. Their numbers should have risen as mothers should now emerge with baby crayfish the size of ants attached to their tails. Each female has the potential of hatching 400 to 900 babies and is capable of reproducing multiple times during the season. After emerging the crayfish feed on the left over rice biomass, which is the main energy production in a plant (How We Grow Crawfish). Feeding on the rice, then causes the crayfish to molt, shedding their old shell leaving a soft shell, and in about ninety days the crayfish can double in size to what is known as "market size". Due to the Philippines having a similar climate to Louisiana, harvesting crayfish would begin about November. Crayfish bait often consists of pieces of fish in the colder months and pellets in the warmer months (How We Grow Crawfish). The baits are placed and received by specially designed crayfish boats; harvest is indicated by the trap's catch. In order for the locals to acquire proper equipment, they would need to be supplied with the necessary equipment or special ordered parts to build or convert boats locally. This aid could be provided by different organizations currently working in the Philippines such as US Aid, FAO, UNICEF or the Filipino government. Problems the Filipino government would face by itself is lack of money and resources. Since the Philipines are a third world country, they do not have the money at disposal like countries such as the United States. They also do not have the resources other countries have as they lack technology and production processes. Crayfish can also be harvested until June when temperatures get warmer. This means that the farmer does not lose income in this field as he uses it year round from rice to crayfish.

Now that the process and value of multi cropping rice and crayfish has been explained, the problem of convincing the population to readily consume it should be addressed. This would not be the first time a new crop is introduced to a country that could help solve nutrition problems. For instance, potatoes were originally banned from 1748 to 1772 in France due to leprosy fears.

They were introduced “into Europe by Spaniards, who brought them back from the Inca Empire” (journalist, Connexion). Most of Europe thought the potatoes to be poisonous as they were grown underground, so they were fed to the hogs. However their views changed after “army medical officer Antoine-Augustin Parmentier was captured by the Prussians during the Seven Years War " (journalist, Connexion). During his imprisonment, he was fed potatoes as it was Prussia’s main staple food and noticed that it had no affect on his health. After being released, Parmentier began persuading and manipulating the public to eat potatoes. He started with the aristocrats and promoted the consumption by hosting dinner parties that were full of potato dishes and presented King Louis XVI and his wife Marie-Antoinette with bouquets of potato blossoms. This presumed dangerous food was now eaten as a delicacy by the aristocrats. He then targeted the peasants by posting guards outside of his potato patch and telling them to let the peasants either bribe the guards or letting the peasants steal from the potato patch. In 1772, all his work was rewarded as potatoes became declared edible. The potato became the lifeline of France’s people due to the famine, which limited the wheat, and saved many of France’s citizens’ lives.

Occurrences such as this have happened over centuries where a new food is established for the betterment of a country's people. For the Philippines society to accept crayfish, there will have to be education and commercialization. Education will require individuals to go across the country teaching the public how to make dishes out of the crayfish. People are often very reluctant to try something new or make it a part of their regular diet without experiencing it first. The commercialization should include a campaign that sensationalizes the benefits and uses of crayfish. Similar to the introduction of potatoes in France, crayfish should be perceived as a desirable food in popular culture. The campaign should utilize all media available to reach as many consumers as possible: newspapers, buses, benches, signs, television, et cetera. Social media should not be ignored; while many people do not have access to a television or radio, they still have cellular devices and social media accounts. The success of this project hinges on consumer buy-in. Without a market, there is no reason for a farmer to produce it.

The Philippines have been faced with malnutrition and overweight citizens for decades due to unbalanced diets. Without change, this will continue to be a growing problem. With the incorporation of crayfish, malnutrition and low farmer revenue should decrease as crayfish are lean protein source and provide farmers with income year round when multi cropped with rice. For these reasons, crayfish are a viable agricultural product that can benefit the Philippines.

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