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Access to Agricultural Yield Through Education

“To the people of poor nations, we pledge to work alongside you to make your farms flourish and let clean waters flow; to nourish starved bodies and feed hungry minds. And to those nations like ours that enjoy relative plenty, we say we can no longer afford indifference to suffering outside our borders; nor can we consume the world's resources without regard to effect. For the world has changed, and we must change with it”. Barack Obama stated this on January 20th in his inaugural address to the nation on foreign policy. The question is, how do we go about doing that?

I believe one way to help increase and improve family income, food production and security in each household is by better educating each family on what and how much farmers are producing. Through education, each farmer and their family can now have the knowledge and understanding on what they need to do in order to sustain food and life for their family and to also better their country by doing smarter methods in increasing food production yields. We need to better educate topics on agricultural yield and sustainability. According to Anthony Trewavas in his article titled The Cult of the Amateur in Agriculture, “conventional agriculture is successful and sustainable”.

As the world population continues to increase, the technology and knowledge in agriculture has been able to cope and feed billions of lives through revolutionary grains and cereals that were produced for third world countries that didn't have the ability to grow such grains themselves. In the same article he also states that “conventional agriculture is sustainable when properly conducted”. Such as through recombinant DNA technology which “speeds up the production of new varieties”. As the third world countries are educated about these revolutionary studies and production that has been produced, they are able to bring these new ideas into their own method of farming and increase their production so they can make a living, eat the food and receive income by selling what they grow.

The problem right now is reaching out to each country, city, village and family about the available information about all the research and findings that have been discovered. Which can be limited in various third world countries because they themselves don't even have the money to afford sending their children to school so they might not have money to travel and attend the informational meetings or public attending in each area of their country.

According to World Summit on Sustainable Development, “About half of the world's population lives on less than two dollars a day...” (Miller 25). Food security, in their eyes, is unreachable unless we can teach them about reaching food security and maintaining their own agricultural yield and improving their lifestyle and not being dependent on other nations to bring food to them when they can learn to provide for their own country and family.

For my region of research, I chose Cambodia, a war stricken country. After having survived mass genocide, loss of culture and political corruption, this country still manages to get back on their feet and work hard to try to retain their former prosperous life. But the number one thing that keeps pulling them down is the lack of food and distribution throughout the country. I chose Cambodia as my country because I have a direct connection to it. My parents are both from Cambodia and they have experienced first hand on how food scarcity and malnutrition can affect their lives. Though they have suffered through food scarcity during the Pol Pot Regime and have now managed to escape it, the majority of Cambodians have not been able to escape and are still under the poverty line and suffering from lack of

food and not having food security. They also have the lack of education that has not been able to be provided for them.

Education throughout Cambodia is very important but since the majority of Cambodians are either farmers or work in an agricultural type of job, money is tight and sending their kids to school is risky thing to do for it might affect their next payment on a loan they may have to pay to the land lord for their use of farmland. Though it's a risky, family farmers still send their children to school. According to UNESCO Institute for Statistics, overall enrollment in primary education in Cambodia is about 91% for boys and 87% for girls on which 85% of those students finish. "Primary education enrolls the largest proportion of poor children where the gender gap is smallest" (Education-Cambodia). There are four levels of education in Cambodia's system; pre-primary, primary, secondary and tertiary.

In Cambodia, there really isn't an average family size. But typically, you'd find each family living together with their extended family which may include grandparents, cousins, and in-laws. They typically live together either under one roof or in the same village. Their diet mainly consists of rice, fish, and vegetables or anything that is available to them. In most cases, they may go without food. "Today, one in nearly seven people do not get enough food to be healthy and lead an active life, making hunger and malnutrition the number one risk to health worldwide..." (Miller 29). If that's the case, they have to extend their amount of food to last longer so they can at least have something to eat each day.

With parents both working, one or both on the farm, or the mother as a garment worker, and the father on odd jobs, their yearly income is a staggering \$135 (Rural Farming). Their children may also help by picking up odd jobs around the village or in cities. As jobs in the city lay off workers due to economic crisis of the world, all the workers will have to eventually return back home to the country side where farming and farmers are not producing enough to feed the consumers who are purchasing their produce but barely even able to feed their family.

Cambodia's sole economy has been traditionally based on agriculture. In the Encyclopedia of the Nations on Cambodia's Economy, "85% of the cultivated land is devoted to the production of rice, while the remainder is on rubber trees" (Economy - Cambodia). Cambodians have no choice but to farm. With the economic crisis around the world, Cambodia and other poorer third world countries have had devastating effect on their economy. "As of May 4, 2009, 1kg of rice cost 2,500 riel (US\$0.61), against 3,200 riel (\$0.78)". Which means the declining food prices makes it difficult for farmers to pay off debt and also the rise in fear has increased for urban workers returning to farm work and finding no jobs that are available. IRIN Asia predict that "Cambodia will be hit the hardest out of the other Southeast Asian countries" due to all of the things that have happened in the previous years continuing into 2009.

Rice is the predominant crop that is grown. Cambodia produce 6 million tons of unhusked rice annually and there are 2.3 million hectares of rice paddy land (Rice Production) but for the remainder of the land, crops such as soybeans or mung beans, taro, groundnuts or sesame are also grown but they are not sufficient enough by national policies. For rice, there are two different crops, one for monsoon season which is a longer cycle and a dry season. Upon research, I found out that, "the major monsoon crop is planted in late May through July, when the first rains of the monsoon season begin to inundate and soften the land. Rice shoots are transplanted from late June through September. The main harvest is usually gathered six months later, in December. The dry-season crop is smaller, and it takes less time to grow (three months from planting to harvest). It is planted in November in areas that have trapped or retained part of the monsoon rains, and it is harvested in January or February..." What farmers usually practice in their agricultural system is mostly rice-based which incorporates rain fed lowland rice, animal production (cattle, pigs, chickens, ducks, fishing and other activities (vegetable production, trade, and wild food collection). The majority of the farms that are in Cambodia are usually small and solely made by the inhabitants themselves and consists of subsistence farming. The problems they face when rice farming,

are the unexpected floods, and natural disasters that ruin their crop.

According to World Food Programme, “Markets play an important role in addressing food insecurity” (Food Markets). Farmers tend to sell their produce to “paddy collectors/traders, millers or directly to consumers”. But they end up having low bargaining power when they come to sell the unmilled paddy. Food purchased from markets accounts for at least 60 percent of household food consumption (Food Market) due to the high demand side on household participation in markets. The majority of these farmers can only do so much by selling limited food surpluses due to their farming in rice activities.

The barriers of improving their whole life, economically and socially, are lack of education and knowledge, transportation, resources and of course money (debt, tax, and interest). By the lack of education, as I have mention before, they don't know what is going on around the world because majority of Cambodians and other third world countries do not have access to television, internet, or even a simple radio. If they had access to it, they can learn what is going on around the nation and they can find out how to improve their agricultural yield and sustain it. They can learn and become an independent nation by producing food for themselves and their country. Another barrier is transportation. These farmers are mostly doing their farming by hand and the work of their animals such as oxen. They can't afford and don't really need machines to do their job but it may be a burden to haul all the heavy produce onto their wagon and hauling it off to the market by day break. If they had a type of automobile, it will become easier and faster for them to bring their produce to the market and consumers. Another barrier is lack of resources such as quality rice and good fertilized land for cultivation. A huge barrier that have these subsistence farmers from any improvement in their agricultural productivity is money. Either they don't have it, they owe, need it, or they do have it but it's not enough, it's the one thing keeping these families from ever climbing out of the hole. As there is no legal control on money lending, families in need have literally no choice but to take out loans at an outstanding rate of eighty to one hundred percent interests (Life in Cambodia). By doing that, they are able to feed their own family for a short period of time but if the season caused them to have a bad crop for that year, they end up losing everything.

By improving each one of the barriers, Cambodian farmers and all of the other subsistence farmers in the world can improve their living standards and to also increase food security for themselves and their families.

Finding research on implementing methods of improvement in agricultural yield and sustainability was a bit of a challenge. Especially on the country of Cambodia, but I've found problems that are going to ruin Cambodia in the near future if they are not educated by what is happening.

According to the Mekong Times newspaper on Cambodian rice production 2008, “Rice production will be reduced in Cambodia if rice fields continue to be sold to be converted to business, factory or residential sites” (Farm). What people are afraid that's going to happen is that all the non-fertile land are going to end up being used for cultivation because most of the rice-fields would have been sold off to other nations that are wealthy because the wealthy nations do not have enough room or land space of their own to do whatever business that they need. If this continues, it “will cause a shortage of farmland and it will drive rice prices up, which will be a burden on the country” (Farm). But farmers are still tempted to sell, because of the overwhelming state of poverty, they want to receive and get money right away. The worst thing about this is that, though they end up with money, their farmland is gone and now they don't have any means of income to provide for their family and have no way to help ensure food security in their country. All their land is going to other foreign nations and then Cambodia will end up not having any output of agricultural produce for their own people and they end up having to rely on other nations to aid them when in the beginning it could have been prevented if only the necessary information and future outlook was told to them. RDI Cambodia states it in a great way, “teaching men to fish” rather than “giving him a fish” (Rural Farming).

One way in which we could have informed them about this was through the farmer's children when they go to school. The teachers could discuss in class on what is happening to their country about agricultural yield.

There have been many great revolutionary results in biotechnology on grains and cereals. One about rice recently just came up. In Japan, a team of scientists has discovered genes that enable rice to survive in high water, providing hope for better rice production in lowland areas that are affected by flooding (High-Yield). This is outstanding and pertains directly to the Southeast Asian regions who are affected by floods yearly. In their findings, they were able to discover a gene called SNORKEL that is able to help rice grow longer stems when dealing with high water levels. The team was able to successfully "introduce the genes to rice varieties that are higher-yield". Motoyuki Ashikari, who headed the project, hopes to "use the gene on long grain rice widely used in Southeast Asia to help stabilize production in flood-prone areas...". So if there's a flood in one of their paddies, the SNORKEL gene would kick in and the stem would grow longer and faster, saving the family's crop from drowning and being destroyed. Since this just came out recently, Cambodians probably have no idea that these genes have been discovered. One strategy for family farmers to be more informed and educated about discoveries such as these, is by gathering up volunteers who are keen on farming, and have the group go to various farming plots that have no electricity and inform them on what's happening and the volunteers can help teach tips on farming.

One other strategy is to encourage non farmers to grow their own private garden, and to not depend on their income to purchase food. A report by the UN Economic and Social Commission for Asia and the Pacific (ESCAP), Sustainable Agriculture and Food Security in Asia and the Pacific, released on 24 April, recommends policymakers enact work-for-food schemes that guarantee employment, encourage poor people to grow private gardens rather than rely solely on income, and establish common property rights over water (IRIN). By encouraging them to do this, they'll learn to grow their own food and they can also bring their produce to markets to sell and not have to rely on rice farming.

Another strategy is to increase education about rice farming and producing other variety of vegetables in schools. Vegetables that are not native to Cambodia have had great success and through the schools, teachers and volunteers can have students test out different types of produce that might grow and increase their produce selection. This can be done by agricultural diversification where the government can implement policies for the framework of this strategy. The government can teach them to rotate crops from rice to sugar cane to nourish the nutrients back into the soil by itself and not having to rely on fertilizer.

Cambodia is improving slowly but surely. Will we ever see the end to world hunger? Possibly, if we only work together. McGovern states in his nonfiction book The Third Freedom: Ending Hunger in our Time, "...we will require not only the help of scientists but also the grassroots participation of men and women in local water and land user association...agriculture revolution of the next three decades will triumph only if land and water management becomes everyone's business" (138). By increasing education and allowing access to information about crop yields, the people of Cambodia will gradually become more independent and be able to feed themselves and having food security of their own.

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