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North Korea: Promoting Sustainable Agriculture Through Cooperative Farm Networks

“Prosperous and Great Country.” While this may be the proud national slogan of the Democratic People's Republic of Korea, commonly referred to as North Korea, for the rest of the world it has become a proclamation of dark irony in the present state of affairs. Although recent news reports focus on the alarming status of North Korean nuclear technology, an even larger crisis is at hand in the form of millions of starving and malnourished North Koreans. The Assessment Capacities Project (or ACAPS) stated in April 2013 that chronic food insecurity affects approximately two thirds of North Korea's twenty four million inhabitants (“North Korea Hunger”). Since the early 1990's, when a famine killed between three and five percent of the population, persistent hunger amongst the people of North Korea has developed into a full-fledged food crisis lasting nearly two decades. Although many efforts have been made to help the people of North Korea, it is no secret that North Korea remains the most isolated nation in the world. The country is still fixed to the philosophy of *juche*, or self-reliance, established by its “eternal president” Kim Il-sung. Yet *juche* has not made North Korea successful in easing the hunger of its people. Due to a lack of understanding of the outside world, most North Koreans remain blind to the severity of their own predicament as well as to the knowledge with which to fix it. Leaving the present state of affairs alone and prolonging action can do nothing but breed more suffering. By alleviating North Korea of even the most fundamental issue of poor farming practices, North Korea can put an end to years of being unable to provide for its own people. With the implementation of an agricultural program based upon informational networks, hands on training, and the distribution of necessary supplies, North Korea can finally possess a sustainable means of feeding its citizens.

In the eyes of the North Korean government, a strong and productive “family unit” is the necessary seed for a strong and productive nation. In recent years, however, the typical North Korean rural family has begun to fall farther and farther from perfection. Instead of the large family comprised of three or more generations living under one roof, the family composition has fallen to four or five people and only two generations sharing one home (United States...). That also may change as more and more family members separate from the “family unit” to relocate. As food becomes more and more scarce, many rural families cannot continue to survive with the number of people they must support. Unmarried individuals and children will often move to the cities to work and earn money for their families. In other situations, in order to avoid separating, entire families will move to another agricultural region to find food (Hyun-sun). In the most desperate cases, families will flee the country or even abandon their children (Hyun-sun). The current rural family situation hinges on one issue, hunger. The diet consists mainly of whatever the family can acquire. Many rely on a personal network of relatives, neighbors, and friends to procure enough to survive (Hyun-sun). Oftentimes, even this support is not sufficient. North Koreans living in rural areas have turned to foraging “wild foods” with no nutritional value, such as grass and tree bark, to fill their stomachs and fend off hunger (“Starving...”). A report from the United Nations indicates that most North Koreans in rural areas suffer from a serious lack of key proteins and fats in their diets (Lim). If this isn't bad enough, each April to October rural communities enter what is known as the pre-harvest “lean season”, in which they must eat fewer and smaller meals (“North Korea Hunger”). For most rural families, the “lean season” has extended to last all year long. The government also promotes a “let's eat two meals a day” campaign to save on food rations (“North Korea Hunger”). Officially, the North Korean government is supposed to be responsible for the diet of its citizens through the Public Distribution System or PDS. In reality, however, the daily rations from the PDS are too small to support the human body. This year, authorities have reduced the daily calorie intake from 1,400 to 700 (Bristow). The ration, which generally consists of 300 grams of cereal per person per day, is less than half of a survival ration

(Bristow). This is why many rural farmers have turned to alternative means of feeding themselves and their families. Unfortunately, irregular meal patterns and the consumption of non-nutritional food simply to fill the stomach frequently causes digestive and health issues such as diarrhea, stomach-ache, stunted mental and physical growth, and even death from poisonous wild plants (“Starving...”). Despite the adequate number of nurses and doctors that North Korea has, the impoverished people of rural areas have little or no access to health care because of limited amounts of drugs, equipment, and antiseptic (“North Korea Hunger”). While diet and health care are typically areas of limited government intervention, education is one area which the government never fails to monitor, even in rural areas. Throughout the eleven years of free and compulsory education in North Korea, students are instructed in the political and social ideals of the government (United States...). One of the most important ideals taught is that of social responsibility. Students are taught that throughout life, their duty is to sacrifice for the state. Perhaps that is why so many refugees coming out of rural North Korea had no idea that they were living in such dire conditions (Lim). In the North Korean mindset, the family situation, poor diet, lack of adequate healthcare, and extreme dedication to the state are simply the only way of life.

To get an idea of the true magnitude of the North Korean food crisis, it is imperative that one gains an idea of exactly where the food supply comes from in the severely isolated country. In the true spirit of North Korean solidarity, and because land is precious, most North Korean rural families work on cooperative farms approximately 2,000 acres in size (VanRaes). An estimated one-third of North Koreans live on some 3,000 farming cooperatives (VanRaes). Although these farms are large in size, farm mechanization is very uncommon. Most harvests are done almost completely by hand. With fuel scarce, any farming equipment that is used is pulled by oxen (Lee, Jean H.). Due to a harsh mountainous climate, approximately fourteen percent of the total land is suitable for farming (“North Korea Hunger”). Every bit of potentially fertile land is tilled and farmed. Across the rural countryside, massive amounts of forest have been cut down so the land may be used for farming. Even rocky hillsides and strips of grass along the roadside are utilized. To make matters worse, winters are long and harsh, and weather conditions have proven to be particularly volatile. “Cold snaps” sometimes make their way across the country because of North Korea’s vulnerability to cold winds from Siberia (Haggard). Droughts and floods have also proven to be particularly common. With so many factors affecting the summer growing season, the only time possible for growing food is in the period from June to October (Haggard). Once farmers plant their crops, they typically grow only a limited number of staple foods, mainly: rice, wheat, corn, soybeans, cabbage, and potatoes (Haggard). Very rarely are animals reared for human consumption, as it is too costly to do so. Most protein comes from plant sources such as soybeans. The small amount of livestock to be found on a North Korean farm is there to assist in the manual labor of the farm. For example, a few oxen are normally kept on each cooperative farm to pull the planting and harvesting equipment. After the fall harvest, farmers in North Korea are required to sell the majority of their produce to the government for a fixed low price, keeping only a small amount for their families (Haggard). As a result, rural families typically make only one thousand to two thousand dollars a year, or about four dollars per day (“Q&A...”). With the unreliability of information concerning North Korea, however, these income figures could actually be much worse (“Q&A...”). Although rural families are close to massive amounts of food on a daily basis, many of them will continue to work their fields with empty stomachs for the rest of their lives.

There are currently a multitude of barriers which inhibit the progress of agricultural activity in North Korea. One which was mentioned earlier is the apparent lack of farmable land in North Korea. Only fourteen percent of the land in North Korea is suitable for farming. Even this small amount is far from ideal. Much of the country is plagued by harsh weather, most commonly flooding and drought. In addition to poor land quality, poor agricultural practices make North Korean food production destined for collapse. For decades, North Koreans have planted one crop repeatedly, exhausting the soil by not implementing crop rotation (Lee, Donna). Massive deforestation to increase farmland has led to severe erosion (Lee, Donna). The North Koreans have also repeatedly put pesticides into already acidic soil,

destroying the land and cutting into the crop yield (Lee, Jean H.). North Korea must acquire modern machinery, fertilizer, fuel, high-quality seeds, decent storage facilities, and training in modern agricultural practices in order to have any success in domestic agriculture (“North Korea Hunger”). The natural solution would be to trade for what food and supplies are needed, however isolation and foreign embargoes make trade impossible except for with a few neighboring countries such as China and South Korea. There are also barriers in the economy which proliferate the food crisis. As the only source of employment for most North Koreans, the national government determines the wages of the citizens (“North Korea Economy...”). Lower production of food means lower compensation for farmers. As many families spend an estimated two thirds of their income on food, less money means more hunger. Some humanitarian organizations provide food relief, however the government controls its distribution (“North Korea Hunger”). As a result, much of the aid is diverted to the military or high-ranking government officials instead of the impoverished (“North Korea Hunger”). While a few barriers can be attributed only to nature, many are the direct consequence of naiveté on the part of the farmer and irresponsibility on the part of the government. With the right direction, measures can be taken to account for most of these obstacles and facilitate North Korea’s transformation to a balanced and sustainable agricultural system.

Of all the barriers obstructing North Korean food stability, the most severe is a lack of sustainable agricultural practices. Only able to utilize less than one fifth of its total land for farming, North Korea has consistently turned to detrimental agricultural techniques in order to produce as much as it can for its people. Deforestation to increase usable farm land has led to extreme erosion. Monocultures, or the repeated planting of only one crop in one area, have led to severe soil depletion. Putting pesticides on already acidic soil has led to further soil exhaustion and decreased the effectiveness of pesticides on pests. By trying to do as much as it can to produce enough food to feed its citizens, North Korea has actually decreased the amount and quality of the food its fields can generate. As the majority of the food is then sold at a fixed low price to the government, which also controls the wages of its citizens, low production means low compensation for farmers. As the public distribution system and the small amount of food rural families are allowed to keep is often not enough to survive, families are then forced to either purchase food at exorbitant prices, or forage for wild foods such as grass and bark. By using detrimental agricultural practices, the amount and quality of generated food is diminished, which results in low wages from the government and leads to expensive or risky means of obtaining food. This chain of effects which condemns rural families to a life of poverty must be put to an end if North Korean hunger is to be stopped.

The current agricultural practices of rural farmers are exacting a harsh toll on the environment as well as the society of North Korea. Keith Bowers, president of the ecological restoration consultancy Biohabitats, best sums up the environmental effects of North Korean agricultural practices in his statement, "From the rivers to the hillsides, there is no vegetation on this landscape that provides any of the types of ecosystem services in terms of stabilizing soils, filtering air, attenuating flood flows, or controlling against erosion," (McKenna). In even simpler terms, Dutch soil scientist Joris van der Kamp affirms that “the landscape is just basically dead” (McKenna). Too much focus on increasing agricultural output has left no consideration for constructive environmental input. The lack of a sustainable agricultural plan means that the environment of North Korea can only be headed in a downward spiral. The same can be said for the condition of North Korea’s citizens. Currently, the agricultural output has fallen so much that there have even been reports of families bartering personal items and engaging in other dangerous activities such as crime, human trafficking, and prostitution in order to keep from starving (Haggard). Impoverished families are particularly disadvantaged, as food prices continue to rise beyond what they can hope to afford. The United Nations World Food Programme presently spends eighteen million dollars a month to feed the two thirds of North Korea’s twenty four million inhabitants who suffer from chronic food insecurity (Ryall). Approximately one in three children under five is chronically malnourished (“North Korea Hunger”). Yet, despite these horrifying facts, the reports coming from the Bank of Korea in recent years have some believing that agriculture is on the rise in North Korea. Bank of Korea data reveals that

the agriculture and fishery industry grew approximately three point nine percent in 2012 (Nam). However, as North Korea does not publish its own data, these reports rely on a lot of guess work from South Korean economists (Nam). A portion of the increase has also been attributed to the extreme generosity of foreign aid organizations within the past few years. Although the data from 2012 points toward an economy on the rise, the U.N.'s Food and Agriculture Organization said that "despite an improved cereal harvest of the 2012 main season, chronic food insecurity exists," (Nam). According to Kim Chun-goo, an economist at Hyundai Research Institute, "the North's economy still remains in the stage of the South's in the 1970s...and many people there are starving" (Nam). For the impoverished rural farmers of North Korea who must sell a fixed amount of their crops to the government, that three point nine percent growth will most likely never be returned to them. Although the statistics for economic growth may have changed, the number of chronically hungry people has not. It will take a lot more than a statistic to change the hunger situation in North Korea.

So much could be changed in North Korea simply by training and educating farmers in the practices of sustainable agriculture. Experts predict that applying lime to combat the acidity of North Korean soil would increase crop yields by twenty to forty percent (Ireson). Rotating cereal crops, such as corn and wheat, with legumes, such as soy and green manure cover crops, would increase the agricultural yield by ten percent (Ireson). By using better seeding machinery, crop yields would increase by about ten percent because of improved germination and more appropriate spacing between each plant (Ireson). By utilizing the methods of SRI or System of Rice Intensification, the rice yield from paddy fields could increase by over twenty percent (Ireson). By applying the methods of Integrated Pest Management, cabbage yields could be improved by forty percent while corn yields could increase between twenty and forty percent ("Welcome..."). Through methods such as these, agricultural production would increase in an environmentally beneficial and sustainable manner. Erosion, flooding, and drought would decrease. The economy would also start to recover because of a better agricultural industry. With a recent policy enacted by the North Korean government as an incentive to produce more, farmers would be allowed to keep thirty percent of their yield while only seventy percent would go to the government (Keck). If farmers produce enough to exceed the government's agricultural target, the surplus would also be given to the families to keep or sell at market prices (Keck). Increased production would mean more food directly in the hands of rural farmers as well as better compensation from the government. By simply addressing this one area of North Korean distress, many pathways for recovery can be opened.

As no plan of action is ideal, it is important that all potential obstacles be considered thoughtfully before proceeding. Unexpected issues such as climate change and population growth would increase the demand for faster production in a shorter amount of time, and could lead to farmers resorting back to industrial agricultural practices. Expansive urbanization would mean less land on which to farm, which would also hinder the sustainability of agriculture. If the fundamentals for sustaining human life such as water and energy are put into jeopardy, North Korea may begin to grow desperate and create conflict with the outside world instead of focusing its efforts inward. Even slow growing and foreseeable issues such as pollution could catch North Korea unprepared to compensate for them with the knowledge and resources which it has now. The obstacle of limited communication within North Korea could also prove quite detrimental in instituting sustainable agriculture since North Koreans must receive permission from the government to move or travel, making even communication from village to village almost impossible. Without communication, no knowledge or learning of sustainable agriculture or modern farming techniques can be spread. Most of all, the ongoing international conflict over North Korean production and possession of advanced weapons and nuclear technology could escalate if action were to be taken or diplomacy were to fail. This would mean that North Korea would cut off all relations with the outside world, ejecting any humanitarian aid personnel working within the country. The rest of the world would respond by severing all transfer of food aid, which is helping to sustain North Korea at this very moment. By understanding the risks that time can cultivate, it is now apparent why action must be taken at once to

provide protection and preparation for the rural families and the impoverished who will most certainly suffer the burden of hard times and changing conditions.

In order to implement the sustainable agricultural practices needed for North Korean food security, a viable program consisting of education, hands on training, and access to necessary equipment for improved farming must be established. As the North Korean government regulates any travel and movement of its citizens, it is extremely difficult for rural farmers to go to the capitol or abroad to learn of sustainable farming practices. Since they cannot travel to the places where that kind of knowledge is available and foreign agricultural experts are limited in their number and distribution across the country, a program must be created wherein the knowledge can come to them. A program could be implemented where the largest cooperative farm in each North Korean province is chosen as a sort of "model farm" for the demonstration and learning of sustainable agricultural practices. Foreign specialists such as engineers, mechanics, scientists, and farmers would then be brought to the selected cooperative farm. These experts would then commence teaching and training the people of that farm about viable agricultural practices and the workings of modern farming machinery. Once that "model farm" was put on the right track for producing food sustainably, the other cooperative farms within that province would send representatives to observe how these new agricultural practices have been employed, and then be trained how to utilize them within their own cooperative farm. These representatives would then return home and share their knowledge with their fellow farmers, bringing their own communities "up to par" with effective modern farming techniques. Once this cycle of learning and training was complete, the farms would be given modern farming machinery and other necessities such as fertilizer to help jumpstart their output. By creating a network of support, learning, communication, and knowledge between North Korean cooperative farms, sustainable agriculture can be made accessible even in North Korea's strict isolationist regime.

It should not be forgotten that several organizations have attempted to do this, only on a much smaller scale and over a limited period of time. Although many have failed, the ones which have succeeded should not be ignored. Over the past few years, Canadian farmers from Manitoba have partnered with the Mennonite Central Committee to institute practices of conservation agriculture in North Korea (VanRaes). Three cooperative farms were partnered with some Canadian farmers to help train the North Korean farmers in conservation agriculture (VanRaes). Since the climate of North Korea is similar to that of Canada, these farmers have been able to bring their own background and experiences to the situation. Martin Entz, University of Manitoba professor and program participant, states that, "it's exactly like talking to a farmer in Manitoba... a farmer is a farmer is a farmer," (VanRaes). By modifying this program for a larger scale and incorporating other foreign experts and resources, a program of cooperative farm networks can become a reality.

In order for this project to be a success, there must be cooperation across a multitude of barriers and institutions. On an international level, foreign aid organizations must combine their efforts. By focusing on the Millennium Development Goals of "eradicating extreme poverty and hunger" and "ensuring environmental stability", the many organizations partnered with the Millennium Development Goals and the many which already contribute to North Korean food aid could "pool" their resources toward one major project, instead of distributing money and supplies amongst the multitude of minor projects which already exist in North Korea. The United Nations in particular could offer substantial support through its many affiliated partners and organizations. By directing the eighteen million dollars it spends per month on North Korean food aid to more constructive measures of relief, the United Nations could give the North Korean people a means of sustaining themselves rather than continuing to inhibit progress by promoting a cycle of dependence and ineffective relief measures. For example, the Food and Agriculture Organization of the United Nations currently has projects underway in North Korea, one of which allots \$1,480,463 for the "Strengthening of Food and Agriculture Information System" (Misika). As of January 2013, \$1,173,445 remains of the original budget for this project (Misika). If the UN Food and Agriculture

Organization could coordinate this money with the Canadian farmers from Manitoba, then the idea of a cooperative farm network could become a feasible possibility. The money to fund this idea already exists in the budgets of international aid organizations. The main barrier is rallying these organizations together toward one, collaborative effort. The national government must also cooperate in allowing foreigners to enter the country. Without the government's consent and supervision, particularly that of the ruling Workers' Party of Korea (WPK), this program will not be able to take place. The government will have some measure of security in the knowledge that each province will have one cooperative farm where foreigners can be easily monitored and accounted for. If the new leader Kim Jong-un truly intends to follow through with his promise that North Koreans will "never have to tighten their belts again," then he must allow for some trust to be built with his people. However, the largest role in instituting this program will fall upon the farmers themselves. The rural families must band together as communities so as to create a more widespread and unified effort. The people of North Korea must make communication their utmost priority. Without communication, no information or education will be spread, and the program will cease to exist. Just as the responsibility to end this crisis must be shared, so must the solution.

North Korea cannot hope to alleviate the starvation and malnutrition of its people without a sustainable agricultural system in place. In order to do this, certain allowances must be made. Existing in poverty, isolation, and conflict for more than sixty years has made North Korea hostile toward the world, and the world has become guarded in return. During the past few years, North Korea has intensified its isolation in response to the nuclear arms situation, and the rest of the world has responded similarly by severing their ties with the country, enforcing an embargo, and even withdrawing their donations from humanitarian aid organizations working in North Korea. Neither response brings the situation any further to resolution, or North Koreans any closer to food security. North Korea cannot solve this problem on its own, and the rest of the world cannot keep ignoring the tragedy occurring this very moment. Ignorance will not make the problem go away; it will only intensify the crisis and prolong the inevitable outcome. When it comes to the hunger of the innocent and impoverished, there is no shade of gray. No amount of human suffering should be tolerated, even if the situation is clouded by political and diplomatic standards. If the world hopes to end hunger, it must face even the most ethically strenuous situations. To put aside the suffering of millions at this very moment for the potential suffering of millions in the future is not a choice that mankind has the right to make. Whether those afflicted are North Korean, Russian, Kenyan, or American, the right to food is universal, and must be maintained by all. Although many nations fear war with the North Korean government and military, for most North Korean citizens the war for existence has already begun.

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