

Nicole Westergaard, Student Participant  
Newell-Fonda High School  
Newell, Iowa

### **The Basis of Food Security: The Flow of Information**

Every 3.6 seconds a human being will starve to death, and of those deaths, three fourths will be children (International Food for Agricultural Development). Within the time it will take to analyze this document somewhere between 250 to 400 people will have starved to death, 175 to 300 will be children. These alarming numbers demonstrate the truly frightening effects of food insecurity and the need for a prompt response.

Food scarcity and affordability have become a growing problem throughout the world, but the regions most severely affected are those of developing nations and rural areas. Within the Indian Subcontinent, the combination of overpopulation, inadequate land, unreliable weather patterns, unsound infrastructure, poor irrigation, and additional factors have proven to be lethal for many. These difficulties do not possess a simple solution, but they do share a common foundation that will lead towards food security and an overall higher quality of life. In the past the implementation of educational programs have been met with a high level of success. The common factor that can lead to food security is education and with it, the necessary preparations to make the programs available to the poor, rural farmers that will benefit the most.

The majority of solutions that are suggested are typically short-term plans that will alleviate the pains of food scarcity. While such methods are necessary to allow for the preparation of long-term programs, they cannot be expected to remedy the issue of food insecurity for any real length of time. By allowing the farmers of rural, developing nations the opportunity to learn how to help themselves, we are allowing a more permanent solution. The spread of education can grant farmers the forewarning they require to prepare for the coming monsoon, or it can demonstrate the best method of cultivation that will produce a higher yield and reduction in the rate of erosion. All the research in the world will prove worthless without the ability to spread the findings to those who need it.

The information that will prove to be the most valuable valuable can be determined by examining the daily routines of ordinary, rural families. The people of the Indian Subcontinent are unceasingly plagued by erratic monsoons, insubstantial incomes, abysmal literacy rates, and ever decreasing land holdings. In the past, the average children per women ratio was around four to five, but due to the increasing hardships, women are now having two to three children. The average farmer does not possess enough land to warrant more than three children, and the scarcity of food has made it nearly impossible to feed a family of four. The GDP per capita of the Indian Subcontinent ranges from \$1,000 to \$5,200, with the majority of these nations around \$2,000. As well, the percentage of the population below the poverty line ranges from 53% to 21%. Of the eight nations, only three have secured a literacy rate over 50%. It is of no coincidence that of the world's poor, over 75% scrape together a living in the rural areas of developing nations such as those of Africa and the Indian Subcontinent (CIA Fact Book).

Upon examination of the GDP per capita, literacy rates, and poverty levels of the eight

nations of the region it becomes clear that there is a direct correlation between the three categories. Of the three nations with a literacy rate above the 50% mark, the GDP was almost double that of the other nations within the region with the exception of Bhutan which had a literacy rate of 47% and a GDP per capita of \$5,200. Following this trend, nations with a high percentage of their population below the poverty line also exhibit low literacy rates. Vice versa, nations with a low percentage of their population below the poverty line display higher literacy rates. Using the information from the eight nations of the region it is evident that nations with higher literacy rates tends to boast a higher GDP per capita and a smaller percentage of citizens below the poverty line (CIA Fact Book). These findings endorse the need for educational programs and a reliable system that will allow the programs to reach the more rural sectors of the nations. Provided the trend is consistent, educational programs will elevate literacy rates and will lead to an increase in the nation's overall GDP per capita and a decrease in population percentage below the poverty line.

Another important component to focus on is the land plots themselves. Family-owned plots are becoming scarcer in quantity by the year, and the sizes are decreasing as well. This of course is to be expected due to the growing population and the farmers' inability to make ends meet with an unpredictable market. While women are having fewer children than in the past, the population is still increasing in size. In the Maldives, Nepal, Bangladesh, and Afghanistan, the population rate is increasing by over 2%, and with the exception of Sri Lanka, the remaining nations of the region currently have a recorded population growth rate that is increasing by more than 1.3%. Unfortunately, farm plots have taken the brunt of the blow to allow for development projects. However, it is not only the growing population that is forcing farmers' off their lands, but also corporations as well. Several protests and marches have been held by the poor farmers of the Indian Subcontinent to impress upon the government the gravity of the situation. P. V. Rajagopal, Vice President of the Ghandi Peace Foundation, spoke out during the Janadesh non-violent march in 2007 stating that, "...hundreds of thousands of acres have been taken away from peasants for industries, mining, dams and other projects." While corporations may improve the economy of developing nation, they can just as easily shatter the lives of those who are displaced when development projects are poorly implemented and inadequately regulated.

Under these conditions, a key focus of educational programs must focus on farming smarter in order to obtain higher yields with smaller amounts of arable land. Even with the weight of developmental projects and growing populations, every nation within the region, with the exception of the Maldives and Sri Lanka, accounts at least 60% of the total labor force to agricultural occupations. The bulk of those with agricultural occupations either own small, cultivated plots of land or work plots of land owned by others and practice sharecropping. Individually either of these types of farmers are inconsequential in respect to the large picture, but as a whole they safeguard the region against wide spread famine. The consequences of inadequately prepared farmers can be traced through history as famines transpired repetitiously throughout the centuries. The Indian Subcontinent has proven to be a challenging region to support large populations due to many factors, but nevertheless, life can be made easier for the people of this region if educational programs existed. Educational programs have the potential to ease the current and future hunger pains of the region by teaching rural farmers how to farm smarter. For instance, by instructing farmers to plant inexpensive trees around the border of their farm plot, the rate of erosion would be significantly decreased and the expected crop yields would be notably higher than if such action was not taken. Educational programs can be effective and safeguard against famine by

allowing rural farmers the ability to learn simple techniques and methods that will ensure a consistent crop return.

Apart from the populations increasing demand for living space and poorly regulated development programs, an important element of the farming months deals with the seasonal monsoons. Without the seasonal monsoons in June and September there is not be enough precipitation to sustain crops. Beginning in June, the southwest summer monsoon begins to blow from the Indian Ocean. These winds are laden with enough moisture to account for nearly 80% of the yearly rainfall in nations such as India and Bangladesh. Along with up to two weeks worth of heavy rain, the summer monsoon brings cooler temperatures which provide optimal conditions for crops such as rice, cotton, course grains, and oilseed. During September the northeast monsoon commonly referred to as the dry monsoon brings a significantly smaller amount of precipitation on its return to the Indian Ocean. Although, in comparison, the September monsoon brings remarkably less rainfall, it effectively cools the region down with its winds from the Himalayas. It is important to note that a heavy reliance on the monsoons can and has lead to disaster in the past. In the 1990s the meager monsoons did not provide an adequate supply of rainfall, and the result was the looming threat of a famine that was only narrowly avoided. Along with the threat of dry years, unusually heavy monsoons can cause just as many problems. In some areas the summer monsoons have been known to unload up to 10,000 mm of rain and ruin an an entire nation's crops (MrDowling).

The one to two week span which encompasses the southwest summer monsoon is vital and without proper irrigation systems the crops will fail and leave the people with the beginnings of an impending famine. The need for proper irrigation has been recognized for thousands of years, and due to its importance, it has been perpetually studied. While highly advanced methods are realized to be unrealistic within the Indian Subcontinent due to the lack of financial backing, this does not mean that simpler methods of irrigation cannot be taught to the people. In 1961 the Green Revolution took place in India and primarily focused on plant breeding, irrigation development, and financing agrochemicals. While famine was once an accepted way of life, following the Green Revolution there has not been a famine since. However, there have been some close calls such as the 1990s that have demonstrated the need for improvement ("FAMINE").

The Green Revolution is proof that educational programs have the potential to fortify nations against famines, but as with any major undertaking there were some holes within the program. Unseen side affect that have stemmed from the Green Revolution can be associated with the improper implementation of certain components due to untrained subsistence farmers. For example, the rise in cancer victims within the Indian Subcontinent can be related back to the improper use of pesticides by untrained farmers. The negative effects of the Green Revolution can be seen in the form of receding water tables, water-logging, salinization, and a reduction in both agricultural and wildlife biodiversity. In the original outline of the Green Revolution some of these side effects were unforeseen due to the fact that it was assumed that subsistence farmers would automatically know how to correctly incorporate the findings into the process of farming. If more educational programs were accessible during the implementation of the Green Revolution, the result may have been a reduction in the number of negative side effects. Even with the flaws in some areas of communication, in the areas where the Green Revolution was able to successfully provide farmers with guidance, the result was remarkable. It should be noted that in the areas in which the Green Revolution provided adequate guidance through educational programs, the

result has been an uninterrupted absence of famine (Bill & Melinda Gates Foundation).

What needs to be done now, is to usher in a new wave of educational programs. With the increasing demand on food supplies every year the rural nations are coming dangerously close to another famine. The impending threat of future dry years to come and an increasing demand for domestic crops has made it clear that provisions are needed and preventative action must be carried out. However, before any action can be realized a system must be set up to instruct the public how to properly perform certain tasks. The chief benefit of educational programs is that they are versatile and able to adapt to almost any situation. Educational programs throughout the nations will be able to conform to the needs of their location and operate at a high level of proficiency. Not only will educational programs follow through with instructing farmers but they will also allow for a basis of research. Educational programs will be able to get a closer look at which methods are a success and which methods are in need of further examination.

By educating farmers within the Indian Subcontinent, the promise of a long-term solution will begin to present itself. While emergency food shipments from stable nations have saved the region from famine in the past, they cannot be relied on in the future. Emergency food shipments from various nations provide only a short-term solution that crumbles once the supplies are consumed. Educated farmers will reduce the necessity for emergency aid from other nations because educated farmers are capable of cultivating crops with higher yields and fewer crop failures. While educational programs will not guarantee that a famine will never occur again, it will safe guard against the possibility by teaching farmers how to irrigate their fields affectively, conserve top soil, and prepare for extraordinarily dry seasons. The efforts to successfully compile the data required for these educational programs will not be a small undertaking, and it will take the combination of research from many nations and the cooperation of the Indian Subcontinent's nations to establish a solid infrastructure that will allow for the flow of information. The founder of the Green Revolution, Norman Borlaug, once stated that, "Food is the moral right of all who are born into this world." By stationing educational programs in high priority locations throughout the Indian Subcontinent the individual's right to food is not only acknowledged, but furthermore it is secured for the future.

## Bibliography

- A man-made famine - India and the world in the Great Hunger of 2008. 2008. Sanhatti 3 August 2008 <<http://sanhati.com/articles/817>>
- Chang, C. P., Bin Wang, and Ngar-Cheung Gabriel Lau. Report of the International Committee of the Third International Workshop on Monsoons. Hangzhou, China, 2004. 1 Sept. 2008 <<http://caos.iisc.ernet.in>>
- Dogra, Bharat. "A little plot of earth: poor Indian farmers on the march." Business Network. 2008. 22 Sept. 08 <[http://findarticles.com/p/articles/mi\\_m0JQP/is/\\_ai\\_n24940305](http://findarticles.com/p/articles/mi_m0JQP/is/_ai_n24940305)>
- Dowling, Mike. Monsoon. 11 July 2005. 01 Sept. 2008 <<http://www.mrdowling.com/612-monsoon.html>>
- "FAMINE." 2008. The History Channel website. 26 Sep 2008, 07:26 <<http://www.history.com/encyclopedia.do?articleId=209020>>
- "India." Encyclopedia Britannica. 2008 Encyclopedia Britannica Online. 02 Sept. 2008 <<http://www.brittanica.com/EBchecked/topic/285248/India>>.
- International Food and Agricultural Development. Soaring food prices and the rural poor: feedback from the field. 2008. 21 May, 2008 <[http://www.ifad.org/operations/fodd\\_food.htm](http://www.ifad.org/operations/fodd_food.htm)>
- "New Hope for African Farmers." Global Development. 2008. Bill & Melinda Gates Foundation. 23 Sept. 2008 <<http://www.gatesfoundation.org/GlobalDevelopment/Agriculture/RelatedInfo/AfricanFarmers.htm>>
- Pepper, Daniel. "The Toxic Consequences of the Green Revolution." U.S. News & World Report. 2008. 07 Sept. 2008 <<http://www.usnews.com/articles/news/world/2008/07/07/the-toxic-consequences-of-the-green-revolution/comments/>>
- Reagnold, John P. & Huggins, David R. "No-Till: the Quiet Revolution." Scientific America July 2008: 70-78.
- "The new face of hunger." Economists. Apr. 2008. 21 August 2008 <[http://www.economist.com/world/international/PrinterFriendly.cfm?story\\_id=11049284](http://www.economist.com/world/international/PrinterFriendly.cfm?story_id=11049284)>
- United States. Central Intelligence Agency. Afghanistan. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/af.html>>.
- United States. Central Intelligence Agency. Bangladesh. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/bg.html>>.
- United States. Central Intelligence Agency. Bhutan. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/bt.html>>.
- United States. Central Intelligence Agency. India. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/in.html>>.
- United States. Central Intelligence Agency. Maldives. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/mv.html>>.
- United States. Central Intelligence Agency. Nepal. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/np.html>>.
- United States. Central Intelligence Agency. Sri Lanka. 21 August 2008. 23 August 2008 <<http://cia.gov/library/publications/the-world-factbook/geos/ce.html>>.