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India, Factor 16: Education

India: Educate to Empower

India's colourful culture conceals the darkest reality of high food insecurity in the rural communities. Education is one of the most significant factors that affect food security in India. In rural regions, farmers lack financial resources and education to adapt to modern agriculture technology and practices. This often has disastrous effects on crop production, which in turn affects the farmer's income and access to food. This vicious cycle will continue unless it is intervened and farmers are provided with efficient modern agriculture technology and education. To achieve this goal, it is recommended that the Indian government should increase expenditure on rural communities by pledging start up fund to create a non-profit organization called "Fund Food Security". The non-profit organization will aim to provide farmers with financial resources to purchase agricultural equipment and gain knowledge. Once the farmers have modern agriculture technology and education, they will be able to produce crops more efficiently and secure a sustainable income. Farmers will also increase food availability for themselves and the community.

In subsistence agriculture, crops are produced for the consumption by the family and the surplus is sold to the local markets. This type of agriculture has been the most prevalent in India for over 700 years. It is more visible in isolated regions in India such as Bihar, Orissa, Madhya Pradesh, Rajasthan, Northeast India, Bundelkhand and Western Ghats (Priyadarshni). Subsistence farmers usually burn a patch of forest and use the ashes to manure the crops. As the fertility of land decreases, farmers leave the land for replenishment and move to different land. With such traditional methods, they use traditional tools such as a hoe, digging sticks, wooden plough and axes. They highly depend on nature for land and water fertility in contrast to fertilizers and insecticides used by large scale farm owners. The crops grown on Indian farms vary based on geography and relative weather conditions. In southern regions such as Kerala, crops such as tea, rice, coconut and coffee are grown. In northern regions such as Punjab, crops such as wheat, rice and cereals are a focus. The top regions close to the international border such as Kashmir, Himachal Pradesh and Uttarakhand are well known for fruits. In western regions such as Gujarat and Rajasthan, crops such as cotton and vegetables are produced. Lastly, in eastern province such as West Bengal and Orissa, rice and wheat are popular. In general, paddy, rice, wheat, vegetables, sugar cane, potatoes, and groundnuts respectively are the highest crop earners for Indian farmers (Food Agriculture Organization of the United States).

Among Indian farmers, the families of subsistence farmers are usually made of five members. Their daily consumption includes rice, beans and leafy vegetables and some intake of meat and eggs (Adoption Nutrition). They tend to be joint families with multiple generations staying together. About two thirds of household families live in rural regions (National Family Health Survey-3). Out of these families, 28 percent fall below the poverty line (National Family Health Survey-3). The enrollment rates of children transitioning from primary to secondary school declines from 70 percent to 51 percent as indicated by the National Family Health Survey-3. These decline rates are higher in rural India showing the lack of access to education. Dependents of the family are used as labour force and tend to follow the footsteps of their family at an early age, and therefore not receiving an education and avoiding engagement in farm management. In addition, women have more of a disadvantage, 12 percent fewer girls attend school than boys. Apart from women, the lower class people also do not receive education as school authorities in rural regions discriminate with them due to the caste system. The rural areas in India still follow the caste system which basically classifies people based on occupational groups. The lower caste people also

referred to as untouchables engage in labour jobs such as construction and cleaning. Their kids are expected to do the same in future no matter how talented they are to pursue higher education.

Apart from education, subsistence farm families also struggle to get adequate food, nutrition and access to health care. Rural India is overlooked when it comes to healthcare as 75 percent of health care centres are located in urban India despite the fact that only 27 percent of the Indian population resides in urban regions (United Nations (UN) Report). Private hospitals and their service charges are unaffordable for the rural population causing them to rely on public hospitals and services which have high waiting times and inadequate facilities. The lack of access to food and nutrition complicates this issue even more. In India, 25 percent of the world's malnourished population resides accounting for 212 million of Indian population (The Times of India). On average, 24 percent of men, 55 percent of women and 70 percent of children are anemic (NFSH-3) indicating insufficiency of food and nutrition in India.

The subsistence farm families face barriers to get enough food and nutrition due to high population, large scale farmers and mismanagement of water and food resources. Urban centres are home to about 30 percent of Indian population and nearly 70 percent reside in rural regions leading to overpopulation and high unemployment rates in rural communities (Census Report). This causes lack of availability of surviving factors such as food and water for them. The presence of large scale farmers complicates this problem as they have a distinct voice due to their financial condition and have access to irrigation facilities in contrast to small scale farmers unable to access those perks. The inadequacy of transparency in the government in the management of agriculture is sure to cause even more inflammation in this issue. India is ranked 120th out of 122 countries in terms of availability of clean water and sanitation claiming that 70 percent of the water being supplied is polluted causing issues in food and water security (Seeram Ramkrishna, Daniel Joo-Then Ng, 73).

Mismanagement of water resources leads to issues in creating proper irrigation facilities and this combined with environmental problems creates barriers in farmer's agricultural productivity. As the demand for water is increasing for domestic purposes and other industries such as textile, garment, beverage and power companies, less water is available for agriculture. In certain parts of India, ground water levels are decreasing due to extreme usage of pumps to extract ground water; such that, some rural regions are experiencing a lack of irrigation facilities. On the other side, in some areas, high ground water levels also referred to as water logging lead to high salt concentration in the soil of irrigated areas. The majority of rural farms are dependent on rain for water. These areas are also subject to climate problems such as less rainfall, high temperature and flood possibilities. Due to climate uncertainty and lack of irrigation technology, the lands suffer from high soil erosion and less water absorption. Agriculture only contributes to 18.2 percent of the Gross Domestic Product despite employing 70 percent of the population in India indicating poor agricultural productivity (Food and Agriculture of the United Nations).

Poor agricultural productivity combined with the shortage of land availability and employment opportunities creates difficulties for Indian farmers in earning a living wage. Indian farms are one of the smallest in the world with 98 percent under the size of three hectares and 67 percent under one hectare (Census Report). There is a large amount of land in India that is unequally distributed and commercial farmers and companies own a lot of land while subsistence farmers own little to no land. The companies who own large amounts of land have many options to sustain themselves whereas; subsistence farmers rely on the few hectares of the land that they possess. Considering the inheritance aspect of Indian culture, the land that the parents possess is divided into the number of kids they have. Huge farming corporations are not only taking a lead in owning more land, but also occupying rural areas as to set up factories causing less land availability for families. Due to this issue, farmers rely on money lenders and land owners and are most part encircled in the cycle of debt. Even when they are successful in their production, when price, efficiency and quantity of large corporations is considered, village industries are unable to compete which is leading to high unemployment rates in rural areas. Sometimes they reject

opportunities to be employed in different regions due to the joint family system. Therefore, one third of the country's population live below the extreme poverty line, the majority of those individuals representing the agricultural sector (NFSH-3).

Education is one key reason that hinders food security in rural farming families. 50 percent of malnourished population reside in rural communities as they are unequipped with the machines and facilities they need to efficiently farm and increase their crop yields (World Health Organization). Indian subsistence farmer highly depend on monsoon season to secure crop production for the following year. However, unpredictable weather conditions such as extremely high or low precipitation negatively impact crop yields. Weather conditions for the most part have been and will continue to be unpredictable but what needs to be addressed is education. Farmers lack the knowledge about how to deal with weather uncertainties and alternative approaches to sustain their farms. They have a basic understanding about farming from their parents, but they lack a lot of important information about how to plant properly, what fertilizers to use, how to effectively remove crops and how to utilize some of the by-products for future use. When unaware of these strategies, it affects their production negatively requiring more time and energy, but leading to lower yields.

Along with their dependency on weather, Indian farmers also rely on basic technology and tools such as a plough, axe and hoe that leads to poor quality of production despite the long amount of time these tools take to accomplish the work. Majority of the farmers are seen utilizing farm animals which are extremely inefficient. For example, they use ox and cow for ploughing which could be easily being done with a tractor. Financially, much goes into keeping the animals healthy. In addition, the animals also take a long amount of time to get the work done. The basic technology they have does not include sufficient storage facilities and cold chains such that 40 percent of harvest is wasted for this reason (Food and Agriculture Organization of the United States).

The positive impact that agricultural education can make in a farmer's life will ensure the well being of their families. Improving their knowledge of new techniques and technologies, providing them with any physical resources necessary for implementation, can dramatically increase the farmers' level of productivity (Rosegrant & Cline, 2003). An educated farmer will utilize profitable processes and products to maximize his yields along with the understanding of backup plans to manage the risks. Feder, Lau, and Slade (1987) demonstrated that the Training & Visit system of agricultural extension executed in India resulted in "a high probability of at least an acceptable rate of return to intensified extension" (685) showing that training farmer is a fulfilling investment. Market efficiency and productivity is also defined as achieving high net price for outputs and low net prices for inputs. Farmers with this knowledge can make negotiations with their suppliers and customers to achieve high productivity. They will also be able to make accurate choices about quality of their products. Educated farmers are also more likely to accept and invest in agricultural technology to maximize their yields. The communities will gather knowledge that they could pass on to future generations and even share with surrounding regions. This would also help the farmers' communities because they rely on them as well for food and nutrition. Thus, increasing agricultural productivity of farmers can lead to affordable prices for their community members and help the rural regions to be sustainable.

Farmer's education will not only benefit them and their community, but also the environment. Educated farmers will be able to preserve environment properly. Their understanding of soil enrichment techniques will help them overcome the problem of soil erosion they face. They will be able to evaluate whether the products they use such as fertilizers are environmentally friendly and aim to utilize products that do not impact the environment negatively. A part of agricultural education is also learning about the different ecosystem on the farm. Understanding about the importance and relevance of each species will help farmers make better choices about the methods and crops to grow to avoid extinction or over control of any species.

Fortunately, the urgency and the mentioned benefits for agricultural education and intensive research were realized leading to the development of Imperial Agricultural Research Institute (IARI) in 1902 in Pusa. Right from its development, IARI is training individuals for research and also for, ministerial position in the Department of Agriculture. After achieving independence in 1947, India has developed focus in establishing rural universities leaving up to the rural authorities to decide the curriculum. Today, there are many agricultural focused universities referred as State Agriculture Universities (SAU) in places such as Patnagar, Bhubaneswar, Ludhiana, Hyderabad, Bangalore, etc. in total, there are 66 universities focusing on agricultural research in the country. The SAU's focus is on investing in research and agricultural technology in different settings and situations, including rural regions. The SAU's have reached top world rankings, Tamil Nadu Agricultural University (TNAU) was ranked 74th in the world. As part of their extension courses available at SAU, they involve in partnership and mentorship programs with farmers. The professors have a large network with farmers and they partner each student with one farmer. Sometimes, even asking students to provide support and impart their learning to the whole village. Currently, they also have Rural Agriculture Work Experience also known as RAWEX program that students need to participate in before their last semester. These programs and activities in colleges if done at a larger scale will lead to the betterment of the rural communities and farmers if continued.

Along with food security and education, water wastage, urbanization, pollution and climate volatility are other major issues that affect the farmers' well-being. Forty million litres of sewerage water is wasted every year due to lack of ground water management and it also causes ground water pollution. (Dr. Himanshu Kulkarni) Urbanization and development is also happening at a rapid growth in India at the cost of rural regions. India is developing at a high rate known as one of the agricultural giants in the world. However, it is struggling to achieve food security for its own population because all the research and extension is invested into the development of urban areas, the reason being why certain Indian cities such as Mumbai and Delhi are one of the most developed cities in the world. The rapid growth is happening at the cost of environment. Air pollution was ranked 5th largest killer in India in a report by Global Burden of Disease (GBD). It also makes 30 million people in India asthmatic according to World Health Organization (WHO). This pollution is creating severe climate issues such that the temperatures in certain states such as Rajasthan are extremely high as 50.6 degree Celsius and some regions such as Assam have extremely high rainfall and floods frequencies (Cable News Network).

To improve the education of farmer for the purpose of achieving food security, the development of a non-profit organization named Fund Food Security (FFS) will be beneficial. Based on this research and recognizing education as the important factor leading to this problem, FFS will focus on educating and equipping farmers with modern agricultural technology and methods. The support of sustainable parties such as the agricultural corporations, government, UN, urban population will be utilized to ensure the wellbeing of rural farm families. The difference that any organization tries to create takes time and similarly for FFS, it is not going to be an overnight drastic change. After few years full of hard work and commitment, it is sure to create a difference in the lives of many people who will in turn support struggling regions and families around them.

To implement this initiative, the Indian government should provide a start up capital for the operation of the FFS. The government needs to expense the development of headquarters, and the salary of starting full time employees. In the future years after developing a strong operation, FFS can start recruiting volunteers to provide opportunities to contribute. Apart from obtaining financial support from the government, there are several other parties for financial aid. As mentioned, India is one of the agricultural giants in the world with successful agricultural corporations. Therefore, the FFS should be able to request them for sponsorship for the operations and initiatives of FFS. These funds are to be utilized for the purchase of modern agricultural machineries to deliver to the farmers in the rural communities. It is not only about the machineries, but also about the methods. The farmers need to be taught the right methods

for the management and enhancement of the fields. So, FFS should hire agricultural experts who could host seminars in rural communities to train the farmers.

As a part of the program, the rural farmers who benefit from this program should pledge to support at least one other rural community around them. They will be required to set up a lead team that acts as a liaison between the community and FFS. When agricultural experts come for seminars, they will work alongside FFS to organize sessions in their communities. Once they receive advanced technology from the organization, they should help each other in operating and implementing new techniques. On the other hand, the urban population who is mostly sustainable can support these farmers by raising funds and contributing donations to FFS. If not financially, they can just contribute their time in the operations of FFS if possible. They can host awareness campaigns guiding audiences about FFS initiatives and potential ways to contribute.

In conclusion, through education, the rural subsistence farmers will be empowered. Receiving the knowledge and understanding of modern technology and methods will help them increase food availability for themselves and increase their income ensuring the wellbeing of the family. In return, these families will support families and communities around them to help achieve food security in the nation.

Work Cited

- "India | Food Security Portal." *India / Food Security Portal*. N.p., n.d. Web. 15 July 2016.
- "Agriculture in India: Both Weak and Strong." *Agriculture in India: Both Weak and Strong*. N.p., n.d. Web. 15 July 2016
- "India: Issues and Priorities for Agriculture." *World Bank*. N.p., n.d. Web. 15 July 2016.
- "4 Main Causes of Poverty in India – Explained!" *YourArticleLibrarycom The Next Generation Library*. N.p., 2013. Web. 15 July 2016.
- "India's Food and Water Security - Future Directions International." *Future Directions International*. N.p., 2014. Web. 15 July 2016.
- "Family Farming: A Way of Life." - *AgriCultures Network*. N.p., n.d. Web. 15 July 2016.
- "Agriculture in India." *Agriculture in India*. N.p., n.d. Web. 22 July 2016.
- "FAO.org." *FAO Country Profiles:India*. N.p., n.d. Web. 22 July 2016.
- "SPOON Foundation Adoption Nutrition." *Adoption Nutrition RSS*. N.p., n.d. Web. 22 July 2016.
- "World - India and States / Union Territories - Rural - Urban Distribution of Population." *Rural*. N.p., n.d. Web. 22 July 2016.
- "Global Burden of Disease (GBD)." *Institute for Health Metrics and Evaluation*. N.p., n.d. Web. 22 July 2016.
- "World Health Organization." *World Health Organization*. N.p., n.d. Web. 22 July 2016.
- "Welcome to the United Nations, It's Your World." *UN News Center*. UN, n.d. Web. 22 July 2016.
- "CNN - Breaking News, Latest News and Videos." *CNN*. Cable News Network, n.d. Web. 22 July 2016.
- "India News, Latest Sports, Bollywood, World, Business & Politics News - Times of India." *The Times of India*. N.p., n.d. Web. 22 July 2016.
- "Census of India Website : Office of the Registrar General & Census Commissioner, India." *Census of India Website : Office of the Registrar General & Census Commissioner, India*. N.p., n.d. Web. 22 July 2016.