

The Great Unknown: Exploring *Agricultural* Development in the Philippines and Bangladesh



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“Working at the edge of the development of human society is to work at the brink of the unknown. Much of what is done will one day prove to have been of no avail. That is no excuse for the failure to act in accordance with our best understanding in recognition of its limits but with faith in the ultimate result of the creative evolution in which it is our privilege to cooperate.” -Dag Hammarskjöld

Twice this summer, as I stepped off the plane onto the soils of a new country, I was simultaneously exhilarated by the atmosphere that surrounded me and terrified of the unfamiliar world that I had just entered. The first time was on June 1st at the Ninoy Aquino International Airport in Manila, Philippines, the second on June 15th at the Zia International Airport in Dhaka, Bangladesh. In just two months time, I would become immersed in the cultures of two very different Asian countries. I would come to appreciate the intense cultural differences of these two countries, as well as the bonds that transcend cultural boundaries.

When Lisa Fleming, at the World Food Prize, originally approached me about the possibility of visiting two countries during my internship, I eagerly agreed. At that point, I didn't really think about the difference between visiting the Philippines and visiting Bangladesh. They were simply two countries on the other side of the world, and I had no idea about the immense cultural, economical, and social differences that I would encounter. As I started to read travel information about both countries it became clear that I was going to enter two completely different worlds.

In the books and articles that I read in preparation for my trip, Filipinos were reported to be among the nicest and happiest people on earth. How this was “measured” I do not know, but after only a few weeks amidst a fun-loving people of rare kindness and sincerity, I could see where the idea had its roots. The first two weeks of my internship were spent at the headquarters of the International Rice Research Institute (IRRI) in Los Baños, Philippines. As I nervously exited the Manila airport, I was greeted by a blast of the stagnant humid air I would soon be very familiar with and a short, smiling Filipino woman whom I would quickly grow to know and love. “Hello, Anna. My name is Lina, you can call me Tita Lina,” she said. “Tita” means “auntie” in the Filipino language of Tagalog, and Tita Lina was my first introduction to the warm hearts of the Filipino people. Her colleagues in the Social Science Division (SSD) and the Seed Health Unit would continue to share the amazing Filipino spirit of hospitality with me during my time at IRRI. Whether they were carting me off to “snack” in IRRI's various cafeterias, or hurriedly pulling me under the shelter of an umbrella so I wouldn't get wet as rain unexpectedly poured down on us, my Filipino coworkers were quick to make me feel at home in my new country.



One thing I learned about Filipinos is that they love to have fun. This was demonstrated in full force at the SSD Family day, when we gathered one Sunday in a nearby resort to celebrate fifteen years of Dr. Hossain's leadership as Head of the SSD. The love they had for each other, Dr. Hossain, and their work at IRRI was apparent in everything from the goofy T-shirts they had printed with Dr. Hossain's face to the meaningful tributes they gave and the sweet karaoke songs they sang. A rich and vibrant Filipino spirit was captured in the intense competition sparked by the water relay, Buddy Walk and enthusiastic team cheers. The event started at 9 am, and by 3 pm we had already shared three meals together, another trademark of life in the Philippines.

I have never been immersed in a place as exhilarating as IRRI, where people from all over the world are united by a call to end hunger. At IRRI, "Rice is life" and agronomists, anthropologists and entomologists from Germany, Korea and Ghana work together to develop solutions to one of the world's greatest challenges: food security. Founded in 1960 by the Ford and Rockefeller Foundations, IRRI's mission to alleviate poverty unites soil scientists and social scientists alike. IRRI recognizes the necessity of developing not only high-yielding varieties, but the programs and policies that work to bring those varieties and other technologies to the rice farmers who need them. At an institute that is known worldwide for its contributions to the Green Revolution and development of high-yielding rice varieties, I was honored to work in a department that focuses on the farmers who utilize these technologies every day. The Social Science Division implements many programs and publishes many articles that aim to increase the food security of rice farmers in several Asian countries.

One such project was to be the focus of my research. For the first few weeks of my internship, Tita Lina piled my desk high with books, journals, and articles relating to the Seed Health Improvement Project (SHIP) conducted in Bangladesh from 2000-2004. Bangladesh faces immense problems with food security, due to its huge population density. A country with a slightly smaller land area than my home state of Iowa, Bangladesh has a population roughly fifty times as big. With approximately 150 million people and one of the highest population densities in the world, Bangladesh must overcome a lot of obstacles to feed its people. The SHIP project aimed at teaching farmers improved crop management practices to increase their rice yield and the food security of not only the farmer, but the nation. The population of Bangladesh increases by about two million people each year. Rice production must be increased by 300,000 tons each year if those people are to be fed. Over 90% of seeds planted each year in Bangladesh are retained from the farmers' own harvest (Hossain, 2004), and almost none of this was found to be good quality seed. Many farmers would simply save some of their harvest, dry it on the ground and store it in open containers or bags. This meant that the seed they planted each year was often infested with insects and contaminated with soil and other plant parts. Planting good quality seed can result in a yield increase of up to 12%. SHIP taught farmers to harvest a special section of their crop solely for seed use, and to treat those seeds with special care and demonstrated how this simple improvement would increase their yield and reduce production cost on account of weeding and use of pesticides. Some methods SHIP introduced include roguing the field before harvest, selecting good panicles for seed, drying seed above ground, and storing seed in airtight

containers with additives such as naphthalene and neem leaves to prevent insect infestation. One unique aspect of SHIP was it took a very participatory approach to training women from resource-poor households. Farmers' knowledge and input was utilized at each step of the way, and this had a profound impact on the success of the project.

In order to gain a better understanding of seed health, I spent two days in the Seed Health Unit, under the direction of Pat Gonzales, Associate Scientist and Caloy Huelma, Assistant Scientist, who not only provided lessons in seed health, but in Filipino culture and compassion as well. During my two days in Seed Health, I learned to identify good seed from seed contaminants such as insects, pests and soil. Sorting seeds myself would give me a better understanding of the painstaking process of manually sorting seeds and the good eye that the rice farmers I met must have to identify the seeds they will want to plant.

The best way to prepare myself for a visit to the field, though, would be to interact with rice farmers and learn about the seed management practices from the people who utilize them on a daily basis. That is why on Thursday, June 7th, I had the privilege of



visiting the village of Tampac, located in the province Nueva Ecija, Central Luzon, Philippines. This village was one of the participants in the IRRI Farmer Participatory Experiments from 1994-1996. As soon as I stepped out of the car after our four hour trek from Los Baños, I was immediately greeted by sixteen women farmers from the village who were to be my teachers for the day. The women were very enthusiastic about the project and were eager to teach me what they knew. They demonstrated winnowing and

flotation- two methods which are used to separate good seeds from bad seeds and showed me their newly planted seedlings. Although my time with the women from Tampac was short, they gave me a wonderful taste of the hospitality and warm hearts of the many rice farmers I would meet in Bangladesh.

Having equipped myself with as much knowledge about seed health as I could contain, I nervously boarded the plane that would take me to Dhaka, Bangladesh. I had read in books and articles that Bangladeshis never smile, that they eat only with their right hand and using your left could be terribly offensive, and that women were hardly ever seen in public. To make my comfort level dive even further, monstrous floods swept the Chittagong region of Bangladesh, causing mudslides that killed more than 90 people only days before I left for the country. Each article that I read about the floods included a few sentences about the record water levels in Dhaka as well. All of this information raced through my mind as I sat on the tarmac of the Manila airport. "What have I gotten myself into?" I wondered nervously as I watched the Philippines become a mere speck in the ocean behind me.

As it turns out, I had gotten myself into the experience of a lifetime. While it is true that Bangladeshis eat only with their right hand, almost all of my preconceptions about the country would be completely vanquished. I spent a lot of time with very bold women, and even more time listening to Bangla float around my head as the room broke out in laughter. Bengal is a region steeped in age-old traditions and centuries of history and is not nearly as saturated with Western culture as the Philippines, which was both frustrating and refreshing. Although we had very different cultural practices and understandings, my Bangladeshi friends graciously overlooked my clumsiness in their culture. The word that best describes the people of Bangladesh is hospitable. From my supervisors in the IRRI office to the vendors on the street, everyone I met tried to make me as comfortable as possible. After the incredible hospitality, what struck me most about the country was the immense poverty that was evident everywhere I went. From the countless beggars on the streets of Dhaka to the farmers toiling to eke a living out of their land, extreme poverty was evident throughout the country.

Perhaps the best part of my time in Bangladesh was getting to interact with Bangladeshis who truly love their country and were eager to share it with me. The vibrant and flavorful culture of the region was proudly exhibited by all of the Bangladeshis I met. Having only received independence from Pakistan in 1971, Bangladeshis exhibit a rare sense of national pride and appreciation for their own culture. Many of them can recall a time when the region was called East Pakistan, or even when it was a part of India. They embrace the Bengali culture that separates them from the rest of South Asia, from the shalwar kamiz or sari that almost every woman wears to the meals that they eat with their hands. I absolutely loved the bold and unabashed way that Bangladeshis held on to their traditions and their culture. I found their enthusiasm to be contagious, and by the time I left, I could eat a meal using only my right hand without *too* much rice flying onto the intricate pattern of my shalwar kamiz. My closest encounter with the hardship, hospitality, and perseverance of the Bangladeshi people was when I visited the rural villages to assess the impact of the Seed Health Improvement Project (SHIP).



SHIP began by focusing on the male farmers and having them actively participate in the experiments that were conducted. Before long, the researchers realized that a vast majority of the seed health management is done by the women farmers, and the focus of the project shifted to include both men and women. Many of the women were not accustomed to engaging in meetings outside the household so drawing them into the training process was one obstacle that SHIP researchers had to overcome. Eventually, though, most of the women became avid participants and eagerly shared their knowledge with other farmers. My purpose was to try and assess the impact that the training had on

the livelihood of the women participants. In order to focus my research, I created a list of initial hypotheses. Through my questionnaire data and conversations with the women, I attempted to assess the validity of the following statements:

- Participation in the SHIP training will have improved the seed quality and yield of rice, thereby increasing the income and status of women farmers.
- Participation in the SHIP training will have led to a shift from food grain production to seed production.
- Increased income and status of women farmers will have led to a higher level of health care and education in the children of the village.
- Increased production and income will have led to improved food security.

To evaluate the validity of these statements, I conducted seventeen interviews with women in two very different villages in Bangladesh. I will discuss the stories of ten of these women in this report, in order for the reader to gain a better understanding of the project and the people it has impacted.

The Seed Health Improvement Project was conducted in seven districts throughout Bangladesh, in collaboration with several NGOs and research institutes including the Bangladesh Rice Research Institute (BRRI); Bangladesh Agricultural University (BAU); Mymensingh; Rural Development Academy (RDA), Bogra; Bangladesh Rural Advancement Committee (BRAC), PROSHIKA, CARE, Grameen Krishi Foundation (GKF) and WAVE. Due to time constraints, I was only able to conduct interviews in two of the seven participating villages. Sreepur, the first village I visited, is located near Dhaka in the district of Gazipur. The Bangladesh Rice Research Institute (BRRI) supervised and implemented the project in Sreepur. The second village, Maria, is located in the district of Bogra, about 150 km northwest of Dhaka and the project was implemented in collaboration with the Rural Development Academy (RDA). Maria, located in a double cropped irrigated rice ecosystem, is prone to flash floods, making the land very fertile (Zakaria, 2007). Visiting both of these villages allowed me to contrast the effects of the same project, under different conditions and management. A key difference between the two sites is that the project has been continued in various forms by the RDA in Bogra, whereas in Gazipur it ended in 2004.

Under the direction of Mr. A.K.M. Zakaria, the RDA has continued to implement some remarkable seed health programs in the Bogra district. Perhaps the most notable achievement has been the creation of a series of video projects, which teach various aspects of seed health, including seed storage and seed drying. Not only have these videos been shown in many villages throughout the country, but they are also shown on the government television channel. Additionally, RDA continues to train farmers in seed health practices, and offers a seed packaging service to farmers who produce seed. Although SHIP started with only 20 trained farmers, it is estimated that RDA has now trained over 600 additional farmers who now engage in seed production. Now operating under a project called the Good Seed Initiative (GSI) in South Asia, I expected that this involvement would increase the retention of SHIP technologies in the Maria village.

Developing a case study is an art that I do not claim to have perfected. I have appreciated the opportunity to hear the stories of these incredible women and have done my best to convey what I learned from them in this report, though some aspects of their stories have probably been lost in translation or simply omitted due to space. Each interview with a woman consisted of completing a questionnaire about their personal background, participation in the training, accumulation of assets, position on food security, and knowledge of seed health, as well as many additional questions. Much of the information in the case studies was drawn from the contents of my personal notes from the visit. Although I cannot do them justice, the stories of these remarkable women serve to illustrate the impact of the SHIP training, in order to reach a conclusion about development trainings as a whole. I accept full responsibility for any errors contained in this report. I have done my best to accurately preserve and evaluate the stories of these women in a fashion that can benefit future development trainings. In deference to the privacy of the farmers, the names of all of the women and their family members have been changed.

Gazipur

Tahmana

As I removed my shoes to enter Tahmana's house, I knew that this was no typical rural Bangladeshi farm family household. I observed the contents of the large house as we sat on a brightly decorated bedspread, an electric fan whirring noisily above us. A decorated wooden chest containing nice dishes and glasses sat opposite me in the colorful room and family pictures hung on the wall over a table piled high with books. After serving us fresh mangoes and lemon juice, Tahmana sat down to talk with us. Wrapped in a long red sari, Tahmana seemed eager to share her experiences with the Seed Health Improvement Project. At age 35, Tahmana enjoys comforts most rural Bangladeshi women only dream about. Perhaps the most important asset that she has is her education. Both Tahmana and her husband completed class nine, and have succeeded in providing each of their children with education as well. Married at the age of 15, just after completing class nine, Tahmana and her husband Shirajul have established a very successful farm.

Both Tahmana and Shirajul are very enthusiastic about the positive impact that SHIP has had on their farm. Although they were already wealthier than most of the local villagers, SHIP has made it possible to increase their standard of living and the education of their daughters. Prior to SHIP training, Tahmana described that they would sometimes experience what she called "crisis periods", when it was difficult to find enough food for the family. They used to have more livestock, but sold it to cover financial needs such as education and health care costs. Their middle child has been ill since 2001 and must receive injections from a hospital in Dhaka. Struggling to pay for food, health care, and education has become a thing of the past for Tahmana and her family since SHIP training. SHIP taught them to store their seed in jute sacks lined with polythene and sprinkled with naphthalene and neem leaves, which they feel has been very important for increasing their yield. They are now known for the quality of seed they produce, and Tahmana energetically pointed out the window, where a long line of farmers forms each year to buy the seed that she and Shirajul produce. They were able to increase the value of their homestead land fourfold, and they now have extra money to spend on luxuries such as a small television or the cell phone that rang during our interview.

Tahmana shared that before SHIP training she did not participate in the process of cleaning the seeds. She did not know anything about farming methods and so no one would ask her opinion. Now she says she cleans the seeds and plays an important role in making family decisions. She now has her own money to spend as she chooses. She can purchase things for herself, her house, and her girls. Tahmana and Shirajul felt that SHIP training had allowed them to improve many aspects of their lives, and they frequently share their knowledge of SHIP technologies with other farmers. They sell 800 kilograms of seed per season and Tahmana hopes they will be able to continue increasing the land devoted to seed production.

Shumari

The story of Shumari is in both stark contrast and striking similarity to that of Tahmana. Although she is considerably poorer, she has experienced the same remarkable improvements that Tahmana also spoke of. As we walked up, she quickly retrieved some wooden chairs for us to sit on outside of her house. Shumari's farm consists of two acres of rented land, as opposed to the four owned by Shirajul and Tahmana. Those two acres, however, are a vast improvement from seven years ago when she and her husband had no land of their own and had to work as day laborers on other people's farms. Dressed in a striped sari, she leaned against a tree outside of her house and told us about the remarkable impact SHIP training has had on her life.

Both Shumari and her husband have jobs outside of rice farming to supplement their income. Her husband sells vegetables in the market and Shumari has worked as a midwife for over fifteen years. Although these jobs are still necessary to supplement their income from the rice farming, SHIP technologies have led to a lot of improvements in her life. Before receiving training from SHIP, they simply stored their seed in jute sacks. Now they use a plastic drum or painted motka and additives to help reduce the pest infestation during storage. Along with other SHIP technologies, Shumari feels that this improved crop management has reduced the pest pressure in their field substantially. They are now able to sell rice seeds in the market, for almost twice the price of paddy (unmilled rice).



Shumari became very animated when speaking of the increase in rice production that she has experienced due to SHIP, but rice yield isn't the only thing that has increased. Shumari also feels that her social status has increased. It used to be necessary for her and her husband to work as day laborers in people's homes and fields in order to feed their children, but now they can hire their own house help. Before SHIP training they did not even have three meals every day. They were unable to get school supplies for their children and were forced to pull them out of school. Now they not only have an adequate three meals a day, but once each week they are able to purchase beef and other choice foods. In 2000, before the training, Shumari and her family had to purchase food for six months out of every year. Now they produce enough to sustain them for ten months and must purchase only two months of rice from other farmers.

The extra income from rice production allows them to invest more in her husband's vegetable business, which also increases their income. This increased disposable income allows her to purchase household supplies as well as better food. As she told us about her plans for the future, she lovingly stroked her grandson who had come to observe the interview. I saw in her eyes the same love and affection I've seen in countless other grandmothers and I realized that every grandmother, rich or poor, Bangladeshi or American, hopes to provide their children and grandchildren with a better future. Shumari is hopeful that they can expand their seed production and continue to improve their situation.

Shahida

Wearing a faded blue sari and cradling her eight month old baby, Shahida was the first woman I interviewed who had not participated in the SHIP training. Although she was not a direct participant of SHIP training, she lives very near several of the women participants who I interviewed. She was obviously associated with them and had learned a lot of SHIP technologies from them over time. Her situation has also improved in the past seven years, although there seem to be many factors that have contributed to this.

Shahida and her husband rent 1.165 acres of land which means that half of their harvest is given to the owner of the land. They do produce some seed for sale in Boro season (dry season rice produced with full irrigation), but none during the Aman season (monsoon season rice). Her eldest child, an eight year old studying in class three, is very thin and often ill, which they think is due to lack of nutrition. They seek treatment, but are not able to see very good doctors so she has been frequently ill throughout most of her life.



Although the family has adequate three meals a day, the daily income does not come from rice production. Her husband has been a rickshaw driver for over ten years, and this income helps the family survive. Despite this extra income, they have had to sell some of their cattle to pay for farming costs. Nonetheless, they have improved their house from a jhupri house (a single room with walls made of jute sticks with thatched roofs and mud floors) to a tin roof house with paved floor.

Shahida still stores her seeds in a normal, un-painted motka, which was typical of women who had not received SHIP training. When the other women who were gathered learned that she did not add naphthalene during storage to keep insects out, they started instructing her on better storage methods for her seeds. Right before our eyes, SHIP technologies were being passed from one farmer to another.

Shahida reluctantly shared that her husband used to beat her because she had not yet born a son. Now that she has a son, she says that “everybody loves her.” This was a stark realization of the reality for many rural Bangladeshi women, and as I spoke with Shahida, many of other women who were gathered began to share their experiences as well. They shared that before SHIP, women in this area did not have any power to say what they felt or express their opinion. Most women were not allowed to go outside, even for family meetings. When SHIP first came, they were timid about participating in the training, but they gradually became involved. Now women participate in decision making and say that they are not suppressed by their husbands. They feel that now they have equal rights, and they attribute this change to SHIP training.

Rina

Sitting at the foot of the bed in her green sari, Rina exhibited a sense of rare poise and composure as she spoke about her husband's recent accident, which left him paralyzed from the waist down. As we spoke, he lay on the bed in the corner of the sparse tin hut, drifting in and out of consciousness. Rina is a wonderful example of a strong woman leader, but her husband's illness has thrown the future of her household into question. They have already taken a loan from her sister to pay for her husband's treatment, and they were selling one of their cattle on the day of our interview as well.

Having received only an informal education and raised five children, Rina has worked hard her whole life. She and her husband rent 2.5 acres of farm land, an acre more than before SHIP training. Rina explained that before SHIP, owners were reluctant to rent land to them because they had very low yields, but now it is no problem. Rina described life before SHIP as being very difficult for her family. She worked in someone's house for extra income, but three meals a day was still very tough, and they would always go without medicine for minor illnesses. They used to store their seed in jute sacks or mud pots, and their germination rate was very low. This meant that they would often have to buy seedlings from other farmers. Even with those seedlings, they would have to apply lots of pesticide. The extra money for seedlings and pesticides meant that their production costs were very high.



SHIP has changed many aspects of her life. Not only does she no longer need to work in other people houses, Rina is the main farmer in her household. While we were talking, her daughter piped up that Rina makes more decisions in the family than her husband. She is in charge of the farm, the household, and the money. She can now hire her own house help, and landowners are happy to rent them their land because they know that they will reap a very healthy yield. Three meals a day is no longer a problem for the family, and they are able to seek treatment for their illnesses. Speaking about the affects of planting quality seed on pest pressure, Rina says, "I cannot find any insect in my field."

It is obvious that Rina holds a lot of power in the family. While we were talking, her son came and made a request. Eventually, Rina pulled out some money and handed him a few bills, before carefully replacing the bills in the folds of her sari. Her older four children did not get the chance to attend much school, but she would like to see her youngest son finish school. Although it is clear that SHIP has helped to improve the livelihood of this family considerably, their well-being is thrown into peril once again with the illness of her husband. The loans that they will take, and the livestock that they will sell, will place them in a very vulnerable position. Rina's story demonstrates that there are many factors that affect a family's livelihood, and rural farmers are constantly in a precarious situation, depending on their production and their health for survival.

Shamoli

Sitting with her back to the group of women hunched over their embroidery, Shamoli wove a story as intricate, complex and inspiring as the elaborate embroidering she had paused from to speak with us. Her story made it clear that SHIP was not the only project impacting the village of Sreepur. Although she lived in the village where SHIP training was conducted, she had never heard of the training or any of its technologies. Married at age fifteen with no education, Shamoli and her husband

store their seeds in jute sacks, and use traditional practices of drying and storing that would not produce good quality seed. However, all three of her children were currently enrolled in school, and they always had an adequate three meals a day.



Embroidering

Besides the .75 acres that they rent out for rice production, Shamoli embroiders pieces for an NGO, while her husband works as a day laborer. After some inquiry I was informed that the NGO employing these women was called the Organization for Human Empowerment and Development (OHED). Only one year earlier, OHED had constructed the tin building behind us as a workspace for the women, as well as a one room schoolhouse for the young children. Shamoli's children, however, were at another school which was funded by a Christian mission. Bangladesh is known for its plethora of NGOs, and this was a prime example of the influence they can have on a family's livelihood. Her children's health care and education is all provided by the Christian mission, as well as a monthly allowance for food, oil, and other needs. She herself has a good job embroidering pieces for OHED. In fact, Shamoli seems to be moving away from rice production. She reported that five years ago they had more food from their own production because they planted during both rice seasons, but now they only plant during the Aman season.



OHED School

away from rice production. She reported that five years ago they had more food from their own production because they planted during both rice seasons, but now they only plant during the Aman season.

Shamoli was one of the few women I interviewed who reported that she often works with her husband in the field. She also shared that her husband encourages her to do what she wants to do and that they share the decision making about farming and other things equally. Although she had not even heard of SHIP training, she exhibited the same empowerment that I encountered among the SHIP trainees. It is obvious that the Christian mission and the NGO have had a significant influence on her life.

Bogra

Salahar

As Salahar ushered us into her home, I glanced at a poster hanging on the wall that read “The female of the species is more deadly than the male.” I was struck by this bold statement, hung so prominently in a rural Bangladeshi household. The boom box sitting on the table below, piled high with CDs, indicated that perhaps this was not a typical farming household.

Married at the age of thirteen without any formal education, Salahar spoke very knowledgably about the farming system. She explained that before SHIP, they did not use any special seed management practices. They merely took seed from their grain supply to plant in the following harvest. Often, the seed was bad and they would need to purchase seed from the market, but they would not have enough money to do so. Now they sell 30-40 kilograms of seed in the market each season for nearly twice the price of paddy. She not only continues to use the SHIP technology from the training, but she is improving on it and extending it to other areas of farming. She was able to start producing vegetables from the extra profit from seed production. Now she also sells spinach seeds in the market, and has applied SHIP technologies to her spinach production.



Salahar recounted her experience when she first started to use SHIP technologies. She told how she and her family spent an entire three days sorting 250 grams of seed. The neighbors teased them for all the time they spent sitting and sorting the seeds one by one, but Salahar said that her life started to change with that 250 grams, which yielded 35 kilograms of rice. Before SHIP, her rice production met only four months of the family’s need and she and her husband both worked in other households to earn money. Now they not only meet all of their own food need, they have excess income to invest in vegetable production, livestock and the education of her eldest son.

Salahar manages many aspects of the household and farming system. If her children need something, they ask their mother for the money. She also decides when to purchase fertilizer and other items for the farm. She said that before SHIP, there was also good understanding between her and her husband, but if she wanted something she could not have it because there was no extra money. Now, she said, “If I want to do something, my husband is encouraging me.”

Salahar is very enthusiastic about the impact of SHIP training on her life. It has stabilized her family and allowed them to weather life’s unexpected storms, such as when a farming accident cut off some of her husband’s fingers last year. They had to take a 500 Taka loan and sell a goat to pay for treatment, but they were able to do this and recover much easier because of their stable income from seed and vegetable production.

Hamida

Hamida switched off the cartoon playing on the small television set as we entered the room and motioned for us to sit on the bed covered with a vibrant cloth. Across the room sat a nice wooden chest filled with stacks of neatly folded cloth, real glasses and china. Hamida's father was a teacher at a religious school and her family used to be very rich. Four of her brothers were educated, but when her father became ill they were forced to sell their land for his treatment. With no extra income, her younger three brothers were not able to study, and Hamida was married at the age of only 14, having completed class five.

Hamida is a wonderful example of the incredible difference that SHIP training has made for many women in rural Bangladesh. Hamida said that before they started using SHIP technologies, they had very low production, but with SHIP training they started producing more and were able to save their extra income to invest in more land. They now own twenty decimals of their own land, and Hamida hopes to increase this in the future. They have utilized many of the SHIP technologies, such as drying seed on bamboo tables as opposed to the ground, practicing weed management regularly, and storing seed in a plastic drum with additives instead of the traditional earthen pot.



Before SHIP training, Hamida shared that her husband was a day laborer and he made all of the family's decisions. Now Hamida makes many of the decisions, and this has had a profound impact on the family's livelihood. Her husband wanted to keep the money they were saving, but Hamida convinced him to invest in buying land, and this has greatly increased their food security. Hamida plans to sell their cattle to buy more land. Education is one of the greatest assets that a rural child can have and although Hamida tried to convince her husband that her eldest son should continue in school, he dropped out after class five to work with his father on the farm. Now that Hamida is an important part of decisions in the family, she has insisted that their younger son stay in school, and he is currently a student in class seven. Hamida hopes that he can continue and complete his education.



Hamida felt that SHIP training had greatly increased her social status. One indicator of status in Bangladeshi culture is the quality of a woman's dress, and Hamida said that before SHIP she never would have dreamed of having a nice dress to go out in, but now she has several special dresses, as well as more furniture, and even electronics. Hamida hopes to continue increasing her farmland and encouraging her son to complete his education.

Jamila

The muggy Bangladesh air enveloped us as Jamila shared her story. Married at the age of fourteen with no education, she now tends to her two children, ages thirteen and three. Her little daughter munched on a snack as she listened to her parents tell about their participation in the SHIP training. Although we had come to interview Jamila, her husband sat behind us on his cart, smoking a cigarette and frequently answering the questions we asked. The cart, which was purchased fourteen years earlier for 3,500 taka, serves as an additional source of income for the family.

This was the first participant family I visited that didn't seem to have improved as substantially as the other interviewees. Although they continue to utilize many of the SHIP technologies they learned during the training, they do not produce as much seed as most of the SHIP participants I interviewed. They did not sell any seed during the last Boro season, and only twelve kilograms during Aman. Although they used to own about 17,000 taka worth of livestock, they have sold all of it since the start of SHIP training. They used the money from selling their goats to pay for food, farming supplies, and irrigation and sold the cattle to buy more land.



Before SHIP, her husband had worked as a male servant. This job paid 500 taka per year and also provided food, clothing and shelter. He saved his earnings from this job to buy more land, and has gradually accumulated their eleven decimal homestead.

Jamila's husband had just returned from selling twelve kilograms of seed in the market, and he showed us some of the items he had purchased with the money. Although their seed production and income has increased, he felt that food security was actually worse because necessities were far more expensive than they used to be. He said that even though their income has gone up, the price of daily products is so much more expensive that their purchasing power has actually declined and they are no longer able to save money. While this may be true, they would be even worse off without the increased yield of two to four maunds per 33 decimals they have experienced from the SHIP training technologies.

Once her husband drove off in his cart, a reluctant Jamila told us that several years ago her husband rarely listened to what she said and often beat her. They used to live with her husband's family, and he only listened to what his family said. Now that they live on their own land, he listens to her and no longer beats her. She feels that this improvement has also come as a result of SHIP trainers and others who have come to the village and reinforced the value of women in the family. Before SHIP training she would not speak to strangers and often stayed in her house, but now she speaks freely and visits other people's homes. When asked about her future plans, Jamila echoed the wishes of almost all the women I spoke with: educating her children. Her thirteen year old son recently dropped out of school, but Jamila hopes that she will be able to send her daughter to school to ensure her future.

Alomoti

Sitting on the floor of a hut decorated with outdated calendars and posters, Alomoti surprised me by complaining about how lazy her husband was, while he sat and listened in the background! This audacious statement seemed uncharacteristic of even the bold Bangladeshi women I had already encountered. I was astounded as she continued to explain that her husband continually hires laborers instead of working the rice paddies himself.

Although Alomoti didn't stress the impact of SHIP as enthusiastically as the women in Gazipur had, it was clear that the training had a big impact on she and her husband. Before SHIP they were keeping more rice seed, but they used 20 kilograms for seed and 20 kilograms for making puffed rice, because they didn't realize you could keep seed for sale in the market. Now they are selling ten kilograms of seed every season. More importantly, Alomoti shared that her status in the family has really improved. Before the training she felt that her husband never listened to her, but now she says all of the decisions come from her. She even shared that she has taken to hiding their seed from her husband because he takes the seed when he wants money and sells it without asking her. She has also prevented him from selling some of their land, a remarkably bold move for a rural Bangladeshi woman.



They have changed their cropping system as a result of SHIP. They used to grow rice only during the Aman season, and during Borro they would grow jute and beans. Now they grow two seasons of rice and they say that this is much better, although labor



Earthen Pot

costs are very high. They have adopted many of the SHIP technologies, such as storing seed in jute sacks lined with polythene and sprinkled with neem leaves and bishkatali instead of simply the traditional earthen pot. They said that it used to be easier to hire laborers because they only needed to provide food, but now they must also provide daily wages to each laborer. This increases the production costs a lot, but their income has still been increased because their production is much higher. SHIP has changed many aspects of their lives. They shared that they frequently eat beef and chicken, which was not possible before the training. Additionally, their youngest daughter is currently a student in class seven, whereas her older sister dropped out after class five.

Even with SHIP technology and planting quality seeds, the family has struggled at times to make ends meet. They sold one of their cattle last year to cover farming needs, and the other two cattle were stolen. Furthermore, although she told of her status increasing, the presence of her husband meant that she often sat and listened while he answered the questions directed at her. No case is black and white, and Alomoti's case demonstrates the complexity of each scenario.

Razia

A crowd quickly gathered as we walked through the village of Gainakury, located about eight kilometers away from Maria. They were excited by what we were told was the first visit from a foreigner to their village. I had already caused quite a commotion as I stepped into the shelter of Razia's house. To make the experience complete, when her two year old daughter turned around to see a very tall person of such light complexion entering her house, she burst into tears and ran sobbing into her mother's arms. As the group of almost forty people crowded in to listen to our interview, it was clear that we had found a village interested in our arrival.



Having completed class eight, Razia was one of the most educated women I interviewed. Both of her parents had some education as well, and her husband was a teacher at a nearby madrasa, or religious school. Although we had traveled to a remote village, the education level of Razia and her family meant that they started in a position much different than most of the other participants we interviewed. Razia had heard of the training conducted in Maria village, but she had not seen any information about it. The people said that Maria has a reputation for having good seed, but they do not know any of the SHIP technologies. While Razia stores her seed in jute sacks lined with polythene, she does not use any of the additives that greatly reduce insect infestation during storage.

The value of their livestock has declined considerably over the past ten years, as they have had to sell them to keep up with accumulating farm management, household and education costs. With twelve cattle, ten goats and several chickens, they had an approximate livestock value of Tk. 100,000, which has now declined to only around 30,000. They used to sell paddy in the market, but now they produce just enough to feed all the members of the family. They took a loan from the Krishi Bank for Tk. 50,000 to improve their house. Since the money was not invested in productive activities, they could not repay the loan. As the Bank workers insisted in repayment of the principal and the accumulated interest, they were forced to mortgage two acres of land to repay the debt. They are not sure whether they can ever recover the land. Despite these financial setbacks, they continue to finance the education of their children.

There are several differences between Razia's story and the stories of SHIP participants. One key difference is that Razia does not keep any seed for sale in the market. She only plants rice during the Aman season, and last season she used 30 kilograms of her own seed and purchased five kilograms of another variety. Additionally, she says that the pest pressure in her fields is severe and they frequently use pesticides. In contrast to many SHIP participants interviewed, Razia said that she does not really worry about major decisions in the household, but lets her husband make them. She did not seem to think twice about this, but told us that she is busy enough taking care of her kids and the daily house work.

Synthesis

The topic of the 2005 World Food Prize Youth Institute was “Understanding Trends in Global Nutrition: The Paradox of Hunger and Obesity.” As my small group sat around our table in the Carver Center, we tried hard to create a pyramid of development factors, attempting to rank things like education, infrastructure and technology in order of their importance in development work. After a couple of hours of laborious discussion, we concluded that such a ranking was simply impossible. Instead, we created a wheel, where each factor was linked to every other factor and without the support of one, the wheel would collapse. In trying to synthesize my data and information from these case studies, I had to accept the fact that isolating SHIP as a development factor is impossible. The world in which we live is extremely complex, and no single factor can be isolated from the rest. The ideal science experiment would allow the scientist to isolate one variable for observation. In the case of my research, the purest form of assessment would come from evaluating the same farmer’s life with or without the SHIP training. As the time machine that would allow such a precise social science study has not yet been developed, I can base my conclusions only on the words of these women and several key indicators which suggest some trends.

On the last day of my trip to Sreepur, we held a “snack” session for the women we had interviewed to wrap things up and ask any additional questions. As I sat and listened to these women share their experiences, it struck me that a meeting like this would never have occurred seven years ago. These rural Bangladeshi women were gathering to share openly and freely about their lives- something that would have been simply forbidden by their husbands before they received training from SHIP. What that meeting also made clear to me was that I couldn’t simply attribute all of their improvements to SHIP. In a country teeming with NGOs and micro-credit institutions, it is difficult to assess where these women would be without SHIP. Almost all of the women from Sreepur have been active members of micro-credit NGOs for almost ten years. Even after SHIP training, the women felt that farming alone would not provide enough for their survival. Especially in the months between harvests, they also need cash to purchase food and necessities and they all felt that the loans provided by NGOs operating micro-credit programs were necessary. As my interviews with non-participants also demonstrate, there are many factors that can affect a family over a seven year period.

While it is true that Bangladesh is bursting with NGOs, SHIP is unique because of its unique potential to increase not only food security, but also the status of women and the education of children. Whereas micro-credit loans offer a “quick fix” for financial burdens, SHIP taught farmers to plan for the future. SHIP’s unique approach to both research and extension ensure that a four year project will continue to affect the village for years to come. There are many aspects of SHIP that contribute to this success and should be emulated by future development projects.

Perhaps the most important element of SHIP was its intentional inclusion of women. By deliberately including both men and women in the training, SHIP enabled better communication between couples. It not only empowered the women, but it also

demonstrated the value of the women's work to the men. Instead of simply handing the women money, as micro-credit organizations often do, SHIP involved women in the process of making the money, thereby increasing their feeling of ownership. Many women shared that they received micro-credit loans before SHIP training, but instead of deciding how to spend the loan money, their husbands made the decisions. Now that they have been empowered by the work with seed health management, the women not only control their loan money, but also the income generated by seed production.

SHIP has won many battles empowering women, but the war is not yet won. Despite significant improvements, there are still many hurdles to overcome. I found that when I interviewed only women, they were very willing to share and also very knowledgeable on all of my questions regarding farm management. However, when their husbands were present, the women often sat in silence as the husband answered my questions. In one household, I began by interviewing the woman, but after only the first few questions, the husband had completely taken over and was answering everything I asked as the woman almost nodded off to sleep on the bed next to me. This family has actually done remarkable things with SHIP training, but I did not feel that I could write a case study about a woman whose voice I hardly heard. I learned from the husband that he not only produces rice seed, but has transferred his SHIP training to vegetables, and is well-known for his many varieties of vegetable seed, which he proudly showcased. My experiences when both men and women were present demonstrate that there is a long ways left to go in empowering the women of Bangladesh. However, the transformation that has already occurred in these rural farm villages is truly remarkable and should not be overlooked.

Due to time constraints, I conducted my research using the case study method and thus most of my conclusions are based on the impressions that I got from conversations with women about their lives before and after the project. However, while seventeen interviewees and sets of data is really not enough to produce conclusive scientific evidence regarding the impact on the livelihood of women, there are several indicators that can be used to assess a noticeable impact of SHIP training. The indicators, which show trends in asset, household, food security, education status, and seed production, can be found in the appendix of this report. Although the pool of data is small, the results do indicate some important trends. Six SHIP participants indicate an increase in the amount of land either owned or rented, while the control group does not indicate any improvement. Likewise, many SHIP participants experienced a significant increase in food security, whereas none of the control indicated any change. One of the first things that a Bangladeshi family will do when their income increases is improve the quality of their house, because this is a visible sign of wealth to the community and will increase their social status. All of the SHIP participants in the Maria village indicated an improvement in their homestead, although few Sreepur farmers indicated any change. The data on education of children is less conclusive, but still indicates an improvement, as do many of the stories that the women shared. Finally, the most significant difference between SHIP participants and non-participants is their engagement in seed production. Every SHIP participant interviewed produces seed during at least one season, whereas no control farmer produces seed during more than one season, and most do not engage in

any seed production. This is very significant because rice seed sells for almost twice the price of rice paddy, and farmers that are able to utilize this market can reap a much greater profit from rice farming.

There is a margin of error involved in any scientific study. Once you have identified the causes of error, you must address the question of whether or not the study is still worthwhile to evaluate. There are indeed many sources of error in this study, from my lack of experience in social sciences, to the selection of farmers for interviewing. It was obvious that the control farmers started off much better than many of the SHIP participants, making it harder to assess where SHIP farmers would have been without the training. Additionally, social status is very important in these areas and farmers who experienced setbacks would be reluctant to share this sensitive information. The desire to look good in front of others could skew the responses of any of the farmers. Despite these sources of error and the limited number of participants in my study, the responses and stories of the individual farmers are compelling enough to allow several conclusions to be made about development processes.

There are many aspects of the Seed Health Improvement Project that should be emulated in further agricultural extension development programs. The importance of involving the farmers in every level of training is summed up in two phrases found throughout SHIP literature- “learning by doing” and “seeing is believing.” By including farmers in both the research and the implementation of the project, SHIP has ensured that its technologies will not only continue to be utilized by the original farmer participants, but by surrounding farmers as well. SHIP technologies are not complex. They are easy to understand and pass on. SHIP’s incorporation of local practices increased farmer’s ownership and understanding of the project and enabled even further extension. The sense of ownership that farmers felt for the project is what has ensured that the farmers continue using the technologies long after the project is over, as has been the case in Sreepur. By targeting twenty to thirty farmers in each village, SHIP became very visible to the community. It is important that all extension programs involve as many participants as possible, so that visibility in the community is maximized. Additionally, by increasing food security in the village, SHIP benefits not a single farmer but an entire community. Increased rice production as a result of SHIP certainly benefits the farmer because of their improved income, but it also benefits the extra mouths that can be fed in the community. In this way, SHIP contributes greatly to food security. Over 90% of seed used in Bangladesh is farmer-retained seed, and much of that is poor quality seed. If SHIP technologies could be extended to all farmers in Bangladesh, the contribution to achieving food security for this extreme land-scarce country would be substantial.

I concluded each interview by asking the women about their plans for the future. Almost every single woman, whether they participated in the training or not, spoke about educating their children. It is widely recognized that the best way to provide a good future for the children is to give them a good educational background, but this is often not possible for many farmers. However, a future plan that was unique to SHIP trainees was the hope of increasing the land for seed production. In increased seed production, the women see not only extra income, but better food, healthcare and education for their

children. It is this response, of combining their hope to increase seed production with their hope for the future of their children, that allows me to say that the Seed Health Improvement Project has, without a doubt, had a significant impact on the livelihood of women farmers in Bangladesh. The success of SHIP can be attributed to its innovative ideas and the ease of continuation by farmers and extension to others. SHIP started as a research project, but evolved into much more and it is *my* hope that similar projects can continue to spread these remarkable technologies throughout the country.

As I broke out in sweat just sitting and listening to the stories of these remarkable women, I marveled at the endurance and hardship of women who toil in heat far worse for their survival. From meeting the farmers who sweat in the field, to the scientists who toil in the lab, my experience at the International Rice Research Institute has given me a new appreciation for the rice I had so thoughtlessly consumed for my entire life. Each grain of rice is a precious gift prepared by the farmers of rural Bangladesh, Laos, China, India or the Philippines. It represents a lifetime of struggle for countless farmers and hours of tedious lab work for many scientists. It is also a beacon of hope for the future of an ever-expanding world population. “Rice is Life” is more than just IRRI’s motto, it is a realization of the role that rice science and development must play in the world market if we are to feed the hungry.

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Appendix

Gazipur

Name of Farmer	Asset status (Decimals of land operated)		Food security status (# of months of family needs met from own production)	
	2000	2007	2000	2007
Tahmana	495 owned	396 owned	11.5	12
Alekha	45 rented	115 rented	12	12
Shumari	0	198 rented	6	10
Mafia	215 rented	215 rented	6	12
Jamuna	55 owned 99 rented	55 owned 99 rented	12	12
Shahida*	115 rented	115 rented	12	12
Rina	148.5 rented	247.5 rented	4	12
Champa*	74 owned	74 owned	12	12
Shamoli*	74 owned	74 owned	7	5

Name of Farmer	Amt of rice seed sold to others in 2007 (kg)	
	Boro	Aman
Tahmana	800	400
Alekha	20	25
Shumari	20	40
Mafia	25	10
Jamuna	15	10
Shahida*	20	0
Rina	50	80
Champa*	90	0
Shamoli*	0	0

Name of Farmer	House Status (type)		Children ages 6-15 not attending school	
	2000	2007	2000	2007
Tahmana	Tin roof	Tin roof	0	0
Alekha	Jhupri	Tin roof	3	1
Shumari	Tin roof	Tin roof	0	0
Mafia	Tin roof	Tin roof	2	0
Jamuna	Tin roof	Tin roof	0	0
Shahida*	Jhupri	Tin roof	0	0
Rina	Thatched roof	Tin roof	2	1
Champa*	Tin roof	Tin roof	0	0
Shamoli*	Jhupri	Tin roof	0	0

* indicates control

Bogra

Name of Farmer	Asset status (Decimals of land operated)		Food security status (# of months of family needs met from own production)	
	2000	2007	2000	2007
Salahar	89 owned	89 owned	4	12
Hamida	33 rented	20 owned 16 rented	0	6
Jamila	33 owned 20 rented	33 owned 20 rented	12	12
Alomoti	371 owned	297 owned	12	12
Azira	99 owned	99 owned 50 rented	8	11
Razia*	891 owned	247 cultivated 545 rented out	12	12
Parveen*	16 owned 198 rented	16 owned 83 rented	12	12
Fuljan	7 owned	28 owned 28 rented	0	2

Name of Farmer	Amt of rice seed sold to others in 2007 (kg)	
	Boro	Aman
Salahar	30	40
Hamida	18	20
Jamila	0	12
Alomoti	10	10
Azira	80	80
Razia*	0	0
Parveen*	0	0
Fuljan	20	15

Name of Farmer	House Status (type)		Children ages 6-15 not attending school	
	2000	2007	2000	2007
Salahar	Jhupri	Tin Roof	0	1
Hamida	Jhupri	Tin Roof (4)	1	0
Jamila	Tin Roof (2)	Tin Roof (3)	0	1
Alomoti	Brick	Brick Tin Roof	2	0
Azira	Tin Roof (1)	Tin Roof (3)	1	0
Razia*	Tin Roof- Earthen Wall	Tin Roof- Brick Wall	0	0
Parveen*	Tin Roof	Tin Roof	0	0
Fuljan	Jhupri (1) Tin Roof (1)	Tin Roof (2)	0	0

* indicates control

