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Sustainable Agriculture and Food Security Grant Annual Report 2015-2016

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1.0 Introduction

Over the past half-century, agricultural policy and international institutions have deemed small-scale and subsistence farming as a backward, pre-industrial form of production. With genuine concern about how to feed a rapidly growing world population, decision makers emphasized mechanization and chemical inputs, and "get big or get out" became the mantra to advance capitalist and socialist ideals for agricultural progress.

However, in 2016, that philosophy is changing. According to the most recent world agriculture report produced by the World Bank and the United Nations, "*small-scale, labour-intensive structures that focus on diversity can guarantee a form of food supply that is socially, economically and environmentally sustainable and that is based on resilient cultivation and distribution systems."*[1] Their research determined that there is an urgent need to invest in smallholder production. Small-scale agriculture holds a secure and promising means of combating hunger and malnutrition, while at the same time minimizing the ecological impact of agricultural practices.

The key components of investing in smallholder agriculture are quite simple: education on appropriate technologies and improved methods of cultivation, a quality seed supply, and agro-ecological strategies to address environmental changes. As the Sustainable Agriculture and Food Security Annual Report 2015-2016 shows, World Renew is addressing these issues head-on through its innovative international programming.

World Renew's 2015-2020 Strategic Plan emphasizes the difficult realities currently facing smallholder farmers, particularly the effects of climate change and the frequency and intensity of natural disasters on food production and food security throughout the world. Because of this, one of the organization's three strategic directions is to foster resilience in communities by enhancing the capacity of communities to prepare for and respond to shocks, trends, and seasonality such as climate change. Further, World Renew's Sustainable Agriculture and Food Security Strategy is anchored on four pillars:

SAFS Grant Priority Themes

FARMER-TO-FARMER EXTENSION AND LEARNING: Initiatives that promote farmer-to-farmer extension and the exchange of new knowledge on key agricultural practices and learnings.

CONSERVATION AGRICULTURE/SOIL FERTILITY RESTORATION: Farming methods that promote a more efficient use of resources and improve soil fertility, productivity, profitability, and sustainability.

MICRO-SCALE WATER RESOURCE MANAGEMENT: Initiatives that promote effective use of available water resources.

AGRICULTURAL TECHNOLOGIES: The introduction of technologies that enhance food security, including new crops, management practices, and infrastructure development.

MARKET LINKAGES AND VALUE CHAIN EMPOWERMENT: Initiatives that facilitate connections between producers and consumers and programs that encourage horizontal and vertical value chain integration.

AGRICULTURE-INTEGRATED MICROFINANCE: Programs that facilitate sustainable access to savings and credit services for rural households.

AGRICULTURAL-RELATED ADVOCACY: Initiatives that promote positive change to systemic challenges faced by smallholder farmers.

[1] http://www.globalagriculture.org/report-topics/industrial-agriculture-and-small-scale-farming.html

- Embracing agricultural practices that are stewardly and sustainable and that address issues of poverty and injustice, with a focus on restoring creation through the use of locally available resources.
- Strengthening the capacity of staff to deliver high-quality agriculture and food security programs.
- Ensuring increased funding amounts and diversified sources of funding for integrated agriculture and food security programs.
- Improving the quality and effectiveness of agriculture and food security programs.

One way that World Renew has been able to implement this strategy is through the generosity of an estate gift designated to enhance food security among rural households through small grants. Country offices and partners may submit proposals for up to $12,000 that address one of seven thematic areas (see SAFS Grant Priority Themes sidebar on previous page) recommended in the *Agriculture and Food Security Program Evaluation Report* of 2009. Thirty Sustainable Agriculture and Food Security (SAFS) grants have been awarded since 2010, with each program running up to three years. These small grants made available through the SAFS Grant offer an opportunity to test and improve a new agricultural process or technology, or to adapt a process or technology that has been successful elsewhere and has not previously been implemented with participant farmers.

This year, the SAFS Grant funded five programs (selected out of six proposals submitted to the review panel) working in the nations of Bangladesh, Nicaragua, Guatemala, and Uganda. A total of $45,660.17 in grant funds was dispersed, with three of the projects building on initiatives started in previous years for greater impact in the communities where World Renew works. In all, 851 participating households directly benefited from the programming, with many thousands more indirectly benefitting through peer trainings, observations, or the receipt of seeds.

The following sections provide an overview of the impact of the five programs supported through the SAFS Grant in 2015-2016, summarizing each project's strategy, key achievements, and lessons learned. In "Voices from the Field" in each section, the statistics come to life with stories of how these programs have restored and improved livelihoods, with far-reaching implications. Following the five program reports are brief descriptions of two capacity building events attended by World Renew and partner staff for further learning and networking related to agriculture and food security.

Participants in Bangladesh learning the process for making organic pesticides

2.0 Promoting Sustainable Agriculture through Peer Farmers in Bangladesh (Year 3)

Background

Since 1995, World Renew's partner SATHI has been implementing community development programs with urban slum dwellers in Netrakona, Bangladesh. This is a low-performing area in terms of education, health, and communication systems. Regular floods, lasting three to four months of the year, have farmers depending heavily on the mono-cropping of rice. This situation has resulted in 70 percent of households—which have an average family size of over five members—living on less than half a dollar a day and experiencing high levels of malnutrition, especially among children. Farmers are heavily dependent on fertilizer purchased in the market because they have little or no knowledge related to composting and other inexpensive ways of improving soil fertility. While surveying communities before the project began, SATHI heard from many community members that if they were taught techniques for making compost and cultivating vegetables, they believed they would be able to better meet the nutritional needs of their families.

During the previous two years of this program, SATHI successfully implemented an urban agriculture project with 10 farmer groups made up of 200 farmers, and SATHI provided two days of Training of Trainers (ToT) on pile composting and vegetable gardening for 167 Peer Farmers. The project presented seven awareness-raising lessons to the farmers involved in primary groups and organized one drama performance to bring awareness to the community about the importance of composting and vegetable gardening.

Project Description

The main focus of the third year of the project was to encourage environmentally-friendly agriculture by training Peer Farmers in five unions of Atpara sub-district (two of these unions had also been included in the second year of the project). The project continued to emphasize involving the trained Peer Farmers in promoting pile composting and vegetable gardening. A new component added in the third year was to introduce and motivate farmers to use organic pesticides and vermicompost. Organic pesticides are appropriate and easily applicable; the raw materials are available in the target community; their cost is low; the process of making the pesticide is simple, allowing anyone to prepare it at home; and it is easy to apply in any garden.

In order to promote the organic pesticide practices, selected Peer

IMPACTS AT A GLANCE

Country: Bangladesh

SAFS Grant Priority Theme: Farmer-to-farmer extension and learning/Agricultural technologies

Number of Beneficiaries:
264 direct (113m, 151f)
2,298 indirect

Actual Spending:
$10,573.11

Outcomes:

- 193 farmers started using organic pesticides on their vegetable gardens.
- 116 farmers have their own compost pile and are using the compost in their fields; 191 farmers have started vermicomposting.
- 766 households are now growing and eating vegetables as a result of SATHI's work over three years.

Farmers assessed multiple local methods of pesticide management. Based on the findings, five local plants with pesticide potential were selected: neem leaves, mehogoni seeds, bishkathali leaves, ata leaves, and dholkolmi leaves. Later, SATHI trained 108 Peer Farmers on how to promote these local pesticide practices in their communities, asking each Peer Farmer to train at least one new farmer in their use.

Results Achieved

In the third year of the program, 108 trained Peer Farmers trained 284 new farmers on the five selected local pesticides. The Peer Farmers used one-on-one mentoring and demonstrations to encourage the new farmers. As a result, 193 (98m, 95f) marginal farmers started using organic pesticides in their vegetable gardens, increasing their production while reducing their costs.

Boiling leaves for organic pesticides

The trained Peer Farmers also oriented 320 new farmers (149m, 171f) on pile composting through demonstrations in their own gardens, encouraging the new farmers to create their own compost piles and use the matured compost in their vegetable gardens. Already 116 (66m, 50f) local farmers have their own compost pile and are using the compost in their fields.

The project also organized a two-day training for 21 Peer Farmers (12m, 9f) on vermicomposting. After the training, the participants received worms so that they could immediately apply what they had learned. Currently 191 local farmers (93m, 98f) have started vermicomposting and have used compost in their vegetable gardens.

The project further involved the trained Peer Farmers in training 248 (94m, 154f) new farmers on vegetable gardening, encouraging them to increase their family's nutrition. Over the course of this program's three years, a grand total of 766 farmers (516m, 250f) and their households are growing and eating vegetables as a result of SATHI's work.

In addition, a drama team organized to perform two dramas on composting, vegetable gardening, and the use of organic pesticides reached the broader communities. Also, staff and participants were able to promote the environment-friendly agricultural practices at a local agricultural fair.

Lessons Learned

- Learning from peers is very effective in promoting knowledge transfer, has a low cost, and takes less project-staff time. In addition, it encourages sustainability; the Peer Farmers trained through this SAFS project emphasized how they plan to continue their activities after the project closes.
- SATHI strategically developed the skills of both men and women Peer Farmers in order to create a safe learning environment for and to effectively ensure that the learning was passed on to both men and women farmers.
- At times, a project's impact can go beyond its scope. While SATHI witnessed a shift within the communities toward eating more vegetables, it was also noted that within three years some farmers had even begun using vegetable gardening as an alternative income source.

SATHI has recently received funding from the Foods Resource Bank to start a four-year program, focusing on agricultural actions for nutrition promotion. This intervention will build on and strengthen the results of the three-year SAFS project interventions, focusing on 1,080 households in another sub-district in Netrakona and adding an additional component of diversification to encourage improvements in household nutrition through the promotion of chicken and duck production.

Voices from the Field

Khokon Miah is a farmer from the village of Balikandi, in the Atpara sub-district of Netrokona, Bangladesh. There he joined a farmer group and received lessons on composting, kitchen gardening, organic pesticides, vermicomposting, and other environment-friendly agriculture practices. He saw the usefulness of organic pesticides and wanted to know how to prepare them at home. Of his own accord, he organized an orientation session on organic pesticides at his home, inviting neighbors and other farmers and coordinating with the SATHI project staff to facilitate the session. On the day of the training there were 56 participants, including men, women, and youth—all from Balikandi village.

The participants quickly saw the benefits of organic pesticides, with the availability and low cost of materials being significant factors in its adoption. During that winter vegetable growing season, most of the farmers in the village switched to using organic pesticides. Many women said that earlier only men used to spray the chemicals in the fields, but now they believed that they also could spray the fields because organic pesticides are not as dangerous as chemical pesticides.

Another farmer, Hasem, from the village of Amati, shared his experience using organic pesticides. "I was not interested in growing vegetables. I used to buy some vegetables at the market. I knew the vegetables had chemicals on them that are harmful for my family's health, but I wasn't too concerned," Hasem explained.

Hasem caring for his kitchen garden

Hasem's mindset began to change when he joined a farmer's group. He received various trainings from SATHI on topics including composting, kitchen gardening, and the use of organic pesticides. Now he is actively growing vegetables because he understands the importance of them. He said, "I grow vegetables to meet the nutrition needs of my family and others."

On the abandoned land around his home he now grows a variety of crops, including gourds, amaranth, radishes, beans, and papaya. Hasem prepares his land with compost and applies organic pesticides in his garden. He is proud of his vegetables, and now he never has to buy vegetables from the market. Recently he learned some seed selection and preservation skills, which he is using to improve his vegetable yields.

His farmer group elected Hasem as its leader, and he continues to share his learning and success with other farmers, encouraging them to plant gardens using compost and organic pesticides. Many farmers from his village have been inspired by his love for vegetable gardening. Hasem is thankful to SATHI and the SAFS project for providing various types of training and support and for getting him interested in vegetable gardening.

3.0 Using Greywater for Dry Season Vegetable Production in Guatemala

Background

In the target communities of El Tineco, Monte Margarita, Palmera Xolgüitz, and Esperanza Miralta in mountainous southwestern Guatemala, coffee is the predominant crop grown and the main source of livelihood for community members. Food security depends heavily on the coffee cycle, and in the months when there are no coffee-related farming activities, families often lack a substantial income source and their food security is compromised. Some farmers grow corn and beans on small plots of land that they rent from the owners of the coffee plantations; however, most families have no access to land on which to cultivate staple crops.

World Renew's local partner in this area, Vine and Branches, has been training families over the past five years to establish kitchen gardens in which they can grow vegetables, native nutritional plants, and fruit trees. This allows the families to diversify their food sources while helping them save money. So far, this new practice has been highly successful, with high rates of uptake in the communities. However, one primary challenge has been the lack of water available in the dry season; with climate change, rainfall patterns have become erratic. Dry season is from November to April, and an additional short dry period called *canicula* occurs within the rainy season. While *canicula* usually lasts 10 to 12 days, due in part to El Niño effects *canicula* has lasted up to 45 days in recent years.

A small experiment with four greywater filters established in 2012 through a contribution from a church learning team from Pease, Minnesota, proved successful. Greywater, left over from washing clothes and dishes in the home, is readily available year-round, countering the perception that crops could only be grown in the rainy season. Four farmers used filtered greywater to irrigate their backyard gardens in which they grow vegetables, yucca, malanga, and sweet potato. These farmers were able to grow food for their families in the dry season, and they were able to sell excess produce in the market. The greywater systems, by treating wastewater that is usually discarded in close proximity to the home, also contribute to reducing environmental pollution, soil erosion, and the spread of diseases.

IMPACTS AT A GLANCE

Country: Guatemala

SAFS Grant Priority Theme:
Micro-scale water resource management

Number of Beneficiaries:
28 direct (16m, 12f)
140 indirect

Actual Spending:
$7,915.00

Outcomes:

- 28 greywater filtration systems were installed.
- 28 households established vegetable gardens that can be used in the dry season.
- Some participating families were already able to produce enough vegetables to sell the excess at market.

Project Description

The project called for 40 additional families to be chosen in collaboration with community leaders to receive greywater filters, on the basis of a family's poverty level, interest, and the location and topography of their land. The participants were expected to contribute 30 percent of the cost of the

filter (approx. $32USD), with Vine and Branches using the money to create a rotating fund to help other families establish filters.

In order for a filter to be installed and to function properly, an incline must exist to facilitate the flow of water from the filter to the garden. Greywater is taken from home sinks, where it is left over from washing clothes or dishes and often contains food and soap residue. The water passes through a bucket filled with gravel, which begins to filter out the foodstuffs. It then passes through a filter made with a barrel, and PVC pipes are used to filter out wastewater that is not suitable for reuse and to divert the greywater. The filtered greywater is then deposited into a storage receptacle fitted with valves that control the flow of water, used for irrigation, to the garden plants as needed.

Example of a barrel filter

Results Achieved

In all, 28 greywater filtration systems were set up, with half of the participating households headed by women. After recognizing that the required cost share was beyond the capacity of the selected households, Vine and Braches reduced the participant contribution requirement, and this reduced in the number of filters Vine and Branches could establish using project funds. In addition, the cost of each filtration system increased because Vine and Branches had difficulty locating low-cost materials and had to purchase alternate materials for the systems.

The 28 households were trained on how to maintain their filter and irrigation systems, receiving brochures with instructions as well. During the installation of the new filtration systems, the beneficiaries committed to clearing space in their gardens, creating room to plant new vegetable varieties, and making preparations to use organic fertilizer. Once the gardens had been prepared, seeds of various local vegetable varieties and medicinal plants—including quixtan, chaya, chipilin, nightshade, amaranth, and yucca—were supplied to encourage the diversification of household diets.

Participating families took advantage of the opportunity to grow a variety of healthier foods in their gardens during the dry season, and to grow them organically. Several beneficiary families have already been able to sell food from their gardens and earn additional income.

Lessons Learned

- The project's start was delayed because of additional time needed to find suitable materials for the filters locally, and that pushed back testing of the water filters into the rainy season. Because the benefits of the filters could not be easily observed during the rainy season, families were unable to see the true potential of the filters as a positive asset, and that led to lower levels of interest than anticipated.
- Unfortunately, Vine and Branches failed to invest the time needed to adequately support the beneficiaries, and about one-third of the beneficiaries failed to contribute monetarily toward the installation of their filters. The beneficiaries' financial contributions would have demonstrated more ownership on their part in the project. During the next dry season, visits will be made to the beneficiaries to follow up on their maintenance and use of the filters and to determine the project's longer-term impact.

- In the future, a complement to a greywater filtration project would be to build mini-greenhouses to protect the food crops from environmental changes, which are leading to increases in pests and diseases and reducing crop yields.

Voices from the Field

This is the testimony of Juan Pérez, a participant in the SAFS-funded greywater project:

Juan Pérez in his garden

Juan Pérez demonstrating his filter

"I'm 66 years old, and I began working on a farm in another region of Quetzaltenango when I was really young. My parents worked on the same farm, but as time passed, my wife and I decided to move to the community of El Tineco. We have seven children, and it's sometimes hard for me to find work, because I never had the chance to go to school. My family has now lived in this community for thirty-five years, and after a lot of work and effort we've been able to buy the humble piece of land that our house and garden sit on. In the midst of all the difficult situations that we've faced over the years, we've always been able to see God's merciful hand, and he has never abandoned us.

"Our family heard about Vine and Branches through our participation in community activities. I was really interested in the way they chose to work with people in poverty, so I began attending their agriculture training programs. In these programs we talked about how we could improve the way that we grew our crops.

"Because I was involved with these programs, I became one of the beneficiaries of the greywater filter project, which has already provided a lot of benefits for my family. First, my family and I were able to use the filtered greywater to irrigate our plants during the dry season, which we had never been able to do before. We also discovered that with this system, puddles of contaminated water no longer formed around our house; before, water pooled quickly around where we were living and became a breeding-ground for insects like mosquitoes.

"Thanks to this project, we've also been able to diversify the types of plants we grow in our garden, including cassava, taro, sweet potatoes, chipilín, quixtán, chaya, chiltepe, güisquil, nightshade, and other plants. These crops have helped our family eat a more balanced diet, and we're really glad because this harvest is the product of our work and of God's blessing. These crops have also provided a source of income for our family, because they can be sold in our community. This has helped us cover some unexpected costs that we've faced as a family.

"I'd like to say on behalf of my family and myself that we're so grateful to God and to Vine and Branches for helping us in this learning process. We hope that everyone is able to see and appreciate the benefits this filter has brought to our family."

4.0 Experiments with Growing Rice Using SRI in Nicaragua

Background

In 2013, one of the World Renew partners working on the east coast of Nicaragua, Acción Médica Cristiana (AMC), did a simple experiment with the System of Rice Intensification (SRI) after reading on the Internet about Cuban farmers' experience using the technique. SRI is a climate-smart, yield-increasing methodology that is quickly spreading among resource-limited farmers as it improves food security and farm-level income by increasing yields by 20-50 percent or more, while protecting the environment and reducing the need for inputs. SRI reduces inputs of seed by 90 percent, inputs of water by 30-50 percent, inputs of chemical fertilizer by 20-100 percent—and it usually reduces pesticide inputs as well. The method is based on four main principles: early, quick and healthy plant establishment; reduced plant density; improved soil conditions through enrichment with organic matter; and reduced and controlled water application.

In AMC's simple experiment, the SRI plot marginally out-produced the traditional rice plot, but there appeared to be some significant gains in terms of weed control, since Nicaragua primarily practices upland rice culture as opposed to paddy culture. Intrigued by this discovery, AMC shared their learnings with World Renew's other partners in Nicaragua, and the idea to expand the experiment to three other regions of Nicaragua was developed, presented as a SAFS project, and approved for the 2014 crop cycle and dubbed "Phase 2" of the experiment.

Project Description

The Phase 2 plan called for three World Renew partners in Nicaragua (ACJ, Fundación San Lucas, and AMC) to conduct two SRI trials each on the west coast of Nicaragua. Their networks of Farmer Field Schools and agriculture promoters were already well positioned to experiment with SRI. Simultaneously, AMC would expand their trials on the east coast of the country with training centers it has established there. In all, 12 trials were planned.

Unfortunately, 2014 saw the height of drought conditions attributed to El Niño phenomena, and these ravaged the countryside on the west coast of Nicaragua. There was essentially total crop loss of all traditional crops, and instead of promoting SRI, the partners found themselves dealing with mass migration and relief responses. As a result, no experimentation took place. On the east coast, however, the climate was much more favorable, and six training centers were able to

IMPACTS AT A GLANCE

Country: Nicaragua

SAFS Grant Priority Theme: Agricultural technologies/ Farmer-to-farmer extension and learning

Number of Beneficiaries: 120 direct (71m, 49f)

Actual Spending: $6,612.00

Outcomes:

- 6 SRI experiments on the east coast averaged 23 percent higher yields than plots using traditional methods of growing rice.
- 120 farmers participated in SRI trials on their own land, averaging yields 16 percent higher than those on control plots.

implement SRI experiments. The trials were closely monitored in each of the five steps of seedbed preparation, seeding, transplanting, weed control, and harvest.

Results Achieved

On average, the SRI plots out-yielded the traditional plots by a negligible margin in Phase 2. However, due to the drought in 2014, World Renew's partners asked if they could extend the project an additional year, as much of the budget for the project remained unused. Unfortunately, precipitation in 2015 was just as precarious on the west coast of Nicaragua as in the year before, so the six trials set up on the west coast that year did not thrive. In the end, it was decided that the best option for the west coast farmers would be to focus on conservation agriculture in the upcoming years instead of SRI.

Evaluating the rice crop

On the east coast of the country, however, AMC expanded the SRI trials to include 120 farmers (71m, 49f) in addition to training center trials in Phase 3. While they varied widely, the yields in the six training centers averaged 3,200 lbs., 23 percent more than the average of 2,600 lbs. harvested in the control plots where rice was cultivated under traditional practices. More telling was that on the 120 individual plots on which farmers used SRI average yields were 16 percent higher—at 2,230 lbs.—than in their control plots, which yielded 1,930 lbs. on average. At the farmer level it was noted that although transplanting requires much more labor than direct seeding, that effort is offset by the savings in labor that would normally be allocated to weeding. In addition, farmers noted that the SRI method requires significantly less seed than traditional methods, leading to cost savings.

Community events were held at critical stages of the SRI trial plot development (seeding, transplanting, and harvesting) at the training centers to raise awareness about SRI. AMC expects that the next step will be to continue to refine the experimentation process with the same training centers and same farmers in the year to come, before promoting SRI more broadly.

However, already SRI has sparked the interest of farmers who live near the fields where this system has being experimented with on the east coast. AMC's promoters indicated that there are now others who are practicing SRI, but they do not have production data from the nonparticipants.

Lessons Learned

- Doing field research requires a lot of support and follow-up on the part of project staff to ensure that experimental methods are closely followed; this proved challenging at times.

- Regarding what worked well and what did not, the decreased weed growth translated into more efficient and effective foliar fertilizer application since it directly benefited the cultivated plants and not the weeds. Also noted was that the seedlings need sufficient moisture for at least 15 days after being transplanted.
- Men and women were actively involved in all of the trial locations, suggesting that the implementation of SRI will not lead to an overburden of workload on either men or women as couples worked together on planting, weeding, and harvesting. Women typically take care of the post-harvest cleaning and drying, while men manage the storage.

Voices from the Field

Ignacio, a pastor of a local Roman Catholic church and father of eight children, lives on the banks of the Coco River in eastern Nicaragua. In 2012 he was introduced to AMC's food security programming and became very interested in this effort. He expressed his desire to serve as a Farming and Livestock Promoter in his community and was chosen along with three others to receive training. Ignacio then shared his newfound knowledge with four other farmers in his community.

In 2014, AMC's agriculture technicians taught the promoters about the SRI method of cultivating rice, explaining that it is more efficient, uses less seed, and requires less weeding. The following year, Ignacio eagerly conducted a trial on a 5 x 5 square-meter area next to a plot on which he used traditional methods of cultivating rice. Through this experiment, he discovered that the rice plants thrived using the SRI method, that fertilizer was easier to apply, and that there was better weed control. Most importantly, yields were far greater, with a harvest of 50 lbs. in the SRI plot and only 30 lbs. in the traditionally planted plot of the same size. In addition, the SRI plot required fewer inputs.

Ignacio in his SRI plot

This year Ignacio planted an area of 25 square meters using the SRI method. He has been able to show others firsthand the success he has experienced with this method, and he says that, as a result, others are now beginning to implement SRI as well. Ignacio reports, "Today I give thanks to God for giving me an opportunity to learn more and to help other families in my community. I give much thanks to AMC for selecting me to participate in their field school and in the SRI experimentation program."

5.0 Scaling Up Conservation Agriculture Practices in Apapai Sub-county, Uganda (Year 2)

Background

World Renew's partner Kaberamaido Mission Development Programme (KMDP) serves families living in the rural Kaberamaido District of eastern Uganda. Kaberamaido was severely affected by the Teso insurgency from 1986 to 1992 and by Karamojong cattle raids during that same period. This area is also still struggling to heal from atrocities incurred by the Lord's Resistance Army a decade ago.

KMDP carries out programs in adult literacy, savings and credit, and food security, particularly toward improving production techniques and seed availability. Farmers in the area face many challenges, including climatic changes and decreases in soil fertility, particularly as population pressures strain traditional land-fallowing practices. Enabling participants to adopt farming techniques that allow them to improve yields and enhance soil and water conservation from their increasingly smaller gardens is critical.

Project Description

During the second year of its SAFS project, KMDP planned to focused on enhancing the adoption of successful conservation agriculture (CA) practices and green manure cover crops (gmccs) among 150 participants (67m, 83f) by using trained CA Promoters to equip others in their communities with knowledge and skills. The project concentrated its efforts in three communities; 33 of the targeted participants had been part of the first year of the project, while 117 were new to the project.

KMDP conducted a three-day training for nine (5m, 4f) selected community volunteers—three from each community—chosen to become CA Promoters. The promoters were then responsible to train and mentor others and to spearhead the adoption of CA practices in their respective communities, with gmccs promoted as a feasible, economical, and sustainable alternative to mulching. The training for the CA Promoters also integrated principles of biblical stewardship, climate change adaptation, and disaster-risk reduction. Upon completion of this training, each of the CA Promoters created an action plan for establishing demonstration plots and mobilizing and training others.

IMPACTS AT A GLANCE

Country: Uganda

SAFS Grant Priority Theme: Conservation agriculture/soil fertility restoration

Number of Beneficiaries:
205 direct (95m, 110f)
1,500 indirect

Actual Spending: $8,560.06

Outcomes:

- 9 community volunteers were trained as CA Promoters and established demonstration plots.
- 142 participants trained by the CA Promoters began practicing CA.
- Maize yields increased by an average of 60 percent in fields planted using CA methods.
- 40 farmers participated in a learning visit to the National Semi-Arid Resources Research Institute.

Results Achieved

In all, nine demonstration plots were set up with the support of KMDP staff, and these became places of learning for other farmers. Each demonstration included the use of at least four of the following gmccs: lablab, jack bean, mucuna, rice bean, mung bean, pigeon pea, soybean, and cowpea. The plots also served as seed multiplication gardens, which was and will continue to be distributed to farmers in subsequent planting seasons.

Because motivation was high in the communities, a total of 205 participants (95m, 110f) were trained by the CA Promoters, with KMDP staff providing support. Of these participants, 142 people (51m, 91f) from 84 households in the three communities began practicing the three aspects of CA: covering the soil, minimum tillage, and crop rotations and associations.

Farmers reported substantial yield increases in their maize when intercropped with a gmcc. Previously, farmers were yielding on average less than 500 kg from an acre of maize, but in the most recent harvest season yields averaged 800 kg of maize and 700 kg of legumes per acre. In addition to the benefits of CA (including moisture retention and soil fertility enhancement) that led to improved yields, farmers also anecdotally noted increased incomes resulting from the sale of both the gmccs and staple crops.

Training on mulching and minimum tillage

KMDP staff conducted follow-up visits to the demonstration plots and participating farmers' fields in order to ensure they were continuously being provided with technical guidance and mentoring. A learning visit with 40 participants and community leaders (26m, 14f) to the National Semi-Arid Resources Research Institute in the nearby Serere District also helped participants to appreciate new agricultural technologies and encouraged farmers to adopt CA practices.

Lessons Learned

- Local varieties of gmccs (rice bean, cowpea) had relatively inferior performance as compared to exotic varieties (lablab, mucuna, and jack beans) in all of the demonstration plots. Still, farmers were more receptive to the local gmccs because they were concerned that there would be a lack of market demand for exotic varieties. Mucuna emerged as the best exotic variety, and rice bean emerged as the best local variety in terms of growth rate, soil cover/weed suppression, and improvements in soil properties and yields.
- In the last quarter, drought forced many farmers to abandon their plots in search of other income sources. The number of participants implementing CA dropped to 121 (39m, 82f), and average plot size under CA decreased from three-quarters to half of an acre of land. This confirms that KMDP must be committed over the long term to ensure implementation of CA practices.
- Spontaneous uptake is already occurring in the targeted communities as non-participants witness visible changes in their neighbors' fields. This is in part made possible because of the level of trust and interaction created through the Village Savings and Loan Associations that KMDP established in the communities through previous programming, which meet weekly.

Voices from the Field

Richard Esemu, his wife, Esther, and their three children reside in the village of Adudul 'B.' Although Esemu grew many crops, his yields were dismal. He could barely harvest a bag from an entire field because of poor soil quality and weed pressure, even when he tried using hired labor.

Planting gmccs using minimum tillage techniques

After learning about CA and gmccs through KMDP's SAFS project, Esemu grew maize using the methods he had learned, and he intercropped the maize with jack beans and soybeans. The results were tremendous: he was able to harvest 300 kg of maize – three times his normal average! In addition, he harvested three bags of beans.

Esemu said, "I now have enough food at home, and I also sold part of my harvest to help pay for my children's education. I had no bull for plowing, but with the good practices I have acquired in the last two years' trainings, I have been farming using the principles of minimum tillage, crop rotation, and cover cropping. In this way I have been able to sell 200 kg of maize, 180 kg of soybeans, and some jack beans, from which I made 620,000 shillings ($180USD)—enough to buy a bull! The bull is now helping me and one of my neighbors with plowing. I now plan to expand the area of my field I plant using CA methods, and I will share all the lessons I've learned with other farmers so they can benefit as well. Any farmer who comes and wants to learn from me is free to get the knowledge I have! This year other farmers' crops are not doing well at all, but I already have signs that even with the drought, I will still have something to harvest."

Joyce Aweo in her garden

In nearby Adudul 'A,' CA has also transformed the life of Joyce Aweo, a 50-year-old farmer and mother of nine children and three foster children. "All my gardens were affected with s*triga* weed, and although I tried using all the chemicals available for killing it, none worked. When the idea of using exotic cover crops came during a CA training, I went for it, and the weed is essentially no more! By planting jack bean between rows of cassava the burden of weeding is reduced, which gives me time to do other activities," she explained.

Since planting jack bean and rice bean, Aweo's cassava and maize gardens have only needed weeding twice and once, respectively, compared to four times and two times, respectively, in the past. She has practiced CA for the past two years and says most weeds have been suppressed. She has also been able to sell some of her increased yield to help her husband pay the school fees of their children, including one enrolled in a college-level certificate course in Public Administration.

"The drought has been too much for us this season, and most farmers have not harvested anything. I am happy that the knowledge I have of CA has helped me to harvest some food. I currently have eggplant and other vegetables from my kitchen garden, which I mulched, and we never lack something on the table," explained Aweo.

6.0 Conservation Agriculture and Soil Fertility Restoration in Southwestern Uganda (Year 3)

Background

The Pentecostal Assemblies of God (PAG) Kabale has been working in partnership with World Renew in southwestern Uganda since 2006. The partnership is based on a mutually shared vision of reaching God's people in need through holistic programs.

Soils in the Kabale District are structurally weak, show poor productivity, and are prone to erosion. The district is very densely populated, which has adversely affected the agro-ecology of the region, as every available piece of land is under cultivation. Ninety percent of the people in the district are subsistence farmers, and population growth has outstripped the carrying capacity of the land, resulting in chronic food insecurity. A baseline survey and Environmental Risk Assessment conducted prior to the start of the project revealed that the overall environment in Kabale has changed drastically because of poor farming methods, land fragmentation, and climate change in the region.

This is the third year of this SAFS project, which seeks to address the problem of soil fertility in order to increase the yields of vulnerable households. In the first two years, a total of 150 farmers from six communities were mobilized and trained in conservation agriculture (CA) and in other methods of restoring soil fertility.

Project Description

In its third year of programming, PAG Kabale aimed at scaling up conservation agriculture and other soil fertility restoration practices by supporting the 150 participating farmers (20m, 130f) from the previous two years of project as well as 50 new farmers in two new communities. Two new farmer groups were formed to bring the total number to eight groups—one in each of the participating communities.

Monthly trainings were held at demonstration plots strategically located in public places in the eight communities to enhance farmer learning. Trainings focused on the benefits of CA and the use of green manure cover crops (gmccs), compost, and manure. Farmers were given the opportunity to share about challenges they were experiencing, and they explored ways to address pests and diseases and to control weeds, including wandering jew and couch grass.

IMPACTS AT A GLANCE

Country: Uganda

SAFS Grant Priority Theme:
Conservation agriculture/soil fertility restoration

Number of Beneficiaries:
234 direct (36m, 198f)
560 indirect

Actual Spending:
$12,000.00

Outcomes:

- 234 farmers were trained in conservation agriculture.
- 230 farmers were trained on composting and liquid manure application.
- 180 farmers were trained in use of cover crops.
- 32 Community Extension Volunteers now manage skills trainings at demonstration plots.

Review meetings and exposure visits were also conducted with community, political, and church leaders to update them on the agricultural methods being promoted, to evaluate progress made, and to recommend future interventions.

Results Achieved

In all, 234 farmers (36m, 198f) were trained in CA, and 53 percent of these farmers have applied at least two of the CA practices (covering the soil, minimum tillage, and crop rotations and associations) on their fields, noting dramatic increases in yields of major crops like maize and Irish potatoes. Other farmers, although they have not yet tried CA on their own land, have witnessed their neighbors' increased yields and the results in demonstration plots, and these farmers are highly likely to begin applying the practices in the next growing season, according to PAG Kabale staff. In particular, farmers' perceptions that mulching creates issues with pests has shifted, and farmers note that because of the noticeable increase in yields, their families, neighbors, and friends are increasingly supportive of the new techniques they are trying.

In addition, 230 of these farmers (35m, 195f) were trained in making and applying compost, liquid manure, and composted manure and 180 farmers (32m, 148f) were trained in the use of gmccs. Farmers are using edible gmccs like fava beans to fix nitrogen in the soil, to control weeds, and to reduce the effects of erosion.

Thirty-two Community Extension Volunteers (12m, 20f), who are responsible for transferring CA skills into the greater community, met on a monthly basis for training, mentoring, and reporting. A one-day exposure visit was organized for the CEVs as well, allowing them to visit progressive farmers in nearby Ihimbi and Kagarama. All these CEVs are practicing what they have learned in their own gardens and they have reached many additional farmers in the communities, with each CEV identifying five farmers who they are responsible to train. In fact, PAG Kabale has received word that even in distant communities that were not part of the project, at least 20 farmers have started implementing CA practices.

To sustain their progress now that the SAFS project has been completed, the eight farmer groups have been encouraged to register with the Sub-county Local Government in order to benefit from government programs. The group members will continue to meet monthly under the leadership of the CEVs to discuss CA and other soil fertility restoration methods, and community demonstration plots will continue to be centers for learning managed by the farmers. In fact, the participating farmers plan to establish demonstration plots at all the local churches, where the plots will be regularly visited and visible to many people from various denominations.

A farmer displaying his dry-season fruit harvest

Lessons Learned

- Although men were encouraged to join farmer groups, as they are the major decision makers in the households, participation by men in the project activities was low because farming in

Kabale is primarily the occupation of women. A behavior change survey could help PAG Kabale in future programming encourage more participation by men.

- Three years was not long enough to ensure the implementation of practices promoted by the project. It is recommended that wherever CA is introduced, activities should be scaled down during the final year of programming to allow staff enough time to guarentee the uptake of the practices in the targeted communities.
- Neighboring communities in the same district should be given priority for new interventions because they provide suitable levels of exposure.
- Monitoring and evaluation were challenging in Kabale, where farmers farm on fragmented pieces of land. This makes accurate record-keeping difficult, particularly with regard to yields per acre.

PAG Kabale recently received funding from the Foods Resource Bank to start a four-year program, building on the momentum of the pilot project funded through the SAFS Grant. The programming will address key challenges of soil degradation through CA and other soil fertility restoration practices; it will also add components of diversification to encourage improvements in household nutrition through the promotion of amaranth and Kroiler birds, and it will promote water harvesting for irrigation to extend the growing season. PAG Kabale will target 1,021 participants in 25 villages, including the villages that were added in the final year of the SAFS project.

Voices from the Field

In 2000, Violet Mukunde lost her husband. With three young children to take care of and about half an acre of land, Violet has been struggling to provide for her family. Violet's oldest child had to drop out of school to work at tea plantations in a neighboring district; her middle child, a daughter, is hoping to start university; and her youngest child is about to start secondary school.

Violet showing her mulched garden

Violet has eagerly participated in the agricultural trainings made available through PAG Kabale's SAFS project. The skills gained from the trainings have given Violet a ray of hope that she will be able to pay the university school fees for her daughter.

Violet said, "When we learned about mulching, I tried it in part of my garden. Surprisingly, in that first season, from that small portion of the garden, I was able to harvest enough Irish potatoes to earn $65. In the second season I planted maize. We ate enough fresh maize, shared with the neighbors, and still stored another 32 kg. This is unbelievable, because this place is so rocky and crops could barely grow here!"

Violet shared that in the past her bananas were not very productive, but after mulching they are now doing well and she no longer has to buy bananas. At Christmastime, she gave a bunch to her mother and also sold some and had enough money to buy rice and to pay for her daughter's school fees so that she could finish high school. Violet said, "I have now asked my daughter to join me in mulching so that we can plant more crops, sell them, and save for her tuition fees for university."

7.0 Capacity Building for World Renew and Partner Staff

Each year approximately 10 percent of the SAFS Grant funds are earmarked for building the capacity of World Renew and its partner agencies' staff. This provides the opportunity for staff to attend networking events, trainings, and workshops related to agriculture and food security. By learning from others, participants gain a greater ability to build capacity in the communities they serve, which in turn increases the sustainability of programming. In the past year, funding was provided for nine World Renew and partner organization staff members to attend two different training events. A summary of the information learned and ideas for applying the learnings in their programming contexts are highlighted below.

7.1 ECHO Asia Conference 2015 (Chiang Mai, Thailand)

The goal of ECHO is to "empower network members to advance food security and sustainable livelihoods among the poor." ECHO regularly organizes conferences that provide networking opportunities to improve the capacity of international development workers by allowing them to share their skills and knowledge with each other. Further, ECHO believes that many neglected indigenous plants can play an important role in fighting hunger, soil erosion, and loss of biodiversity in developing countries, and works to promote these plants in order to improve the lives of small-scale farmers worldwide.

ECHO organized a five-day conference from October 6-9, 2015, in Chiang Mai, Thailand, allowing participants to share best practices and lessons learned from the field under the theme "Equipping Workers." There were 190 participants from 24 countries who took part in this conference, with 15 representatives from World Renew partners in Bangladesh, India, Laos, and Cambodia. Four of these representatives—from partner organizations in Bangladesh and India—received funding through the SAFS Grant in order to attend.

Participants at the ECHO Asia Conference

The conference addressed a variety of topics related to finding solutions to food insecurity and rural poverty in Southeast Asia. These included growing culinary herbs, establishing a community-based seedbank, using SRI to grow paddy rice, employing water catchment and water harvesting techniques, building soil microbes and plant nutrients to grow quality vegetables, and promoting community solutions to the changing contexts of livelihoods for indigenous minorities. Cosmos Khonglah, Project Coordinator for World Renew's partner NEICORD, presented a poster at the conference to highlight the work of the Patharkhmah Food Security Project, which took place from 2009-2015 in Meghalaya, India.

The four participants from World Renew's partner SATHI in Bangladesh and NEICORD in India outlined several learnings from the conference that they plan to experiment with and apply to their own programming contexts:

- Educating farmers about the culinary and nutritional values of amaranth, a crop that is already widely cultivated in Bangladesh.

- Encouraging farmers to use natural methods for backyard gardening, such as composting and organic pesticides, which are cost effective and environment friendly.
- Encouraging marginal farmers to preserve local seeds and to secure sources of local seeds in their communities.
- Researching and sharing the benefits of biochar.
- Reaching farmers by means of modern agriculture extension practices—for example, through the use of videos and cell phones, by which text messages can be sent to a farmer's number so the farmer can learn about new farming techniques in their own language.

We are very excited and hope that we can apply what we have learned on a trial basis with our existing programs so that the marginalized farmers who participate in our programs will become familiar with these new ideas and technologies. Then the community will be empowered to advance in their food security and sustainable livelihoods. In this way, through our participation at the ECHO conference, others will be equipped with agriculture resources and skills to reduce their hunger and improve their lives. We are pleased and thankful to World Renew for the opportunity to participate in this conference!
—Apurba Ghagra and Anthony Drong, SATHI, Bangladesh

7.2 Conservation Agriculture Symposium (Harare, Zimbabwe)

The Canadian Foodgrains Bank (CFGB) has been organizing annual conservation agriculture (CA) networking events since the first was held in 2013. Since then two Conservation Agriculture Technical Officers were hired in 2014 to support CFGB's CA programming in Eastern and Southern Africa, and these annual events have brought partners in the region together for learning and sharing experiences. Successful meetings have been held in Lusaka, Zambia in 2014 and in Arusha, Tanzania in 2015. The conference in Harare, Zimbabwe, which took place February 16-19, 2016, was the fourth such symposium, focusing on the theme of "Building on Diversity."

The Harare symposium was attended by 120 participants from a broad range of organizations funding and implementing CA programming in 15 countries throughout East and Southern Africa. Participants could choose from one of two tracks:

- The technical track focused on training participants in integrated soil fertility management, CA extension approaches, and integrating crops and livestock in CA. This track stressed the importance of taking into consideration marketing, mechanization, gender, and post-harvest issues, and the use of adaptive rather than prescriptive approaches.
- The management track focused on agriculture innovation systems, leading diverse teams, and monitoring and evaluation.

Conference speakers constantly reinforced that in order to be successful, CA programs need to provide farmers with a platform from which they can experiment and adopt what works for them. Principles of CA should be adapted based on various aspects of the local context including rainfall patterns, soil types, and community preferences.

World Renew Uganda has embedded CA into its food security strategy and programming as the nation faces increasing population pressure and decreasing soil fertility. Using SAFS Grant funds,

World Renew Uganda sent Raymond Mutava, World Renew Uganda's Country Consultant, to the symposium as well as four representatives from two of World Renew's local partner organizations:

- From KIDO: Simon Olupot, Manager; and William Olaun, Agriculture Field Officer
- From KMDP: Moses Sheshmond Esalu, Manager; and Samuel Etwomu, Agriculture Field Officer

The participants plan to share their learnings with the rest of the World Renew Uganda team and to guide World Renew's local partners on integrating the learnings into ongoing projects. This will be done by reviewing the training manuals received and by visiting KIDO and KMDP's agricultural projects and providing technical input. In particular, the participants from Uganda emphasized that the cover crops that are most suitable for the region must be determined and promoted, with a key consideration being the acceptability and use of the cover crop as a source of food. In addition, soil testing should be established as a key component of soil fertility programming. World Renew Uganda's partner staff were trained at the conference and were provided with simple soil fertility testing kits.

Training on soil testing at the Harare Symposium

The World Renew Uganda team also plans to evaluate ways in which information flow and support related to CA can be streamlined throughout the year, and will investigate the possibility of implementing cross-partner programming in areas such as marketing or radio programming.

The four days spent in Harare made it clear that the vision of creating a CA network in the region has become a reality. The challenge moving forward will be to use this powerful network to bring maximum benefits to the partners and the farmers they serve.

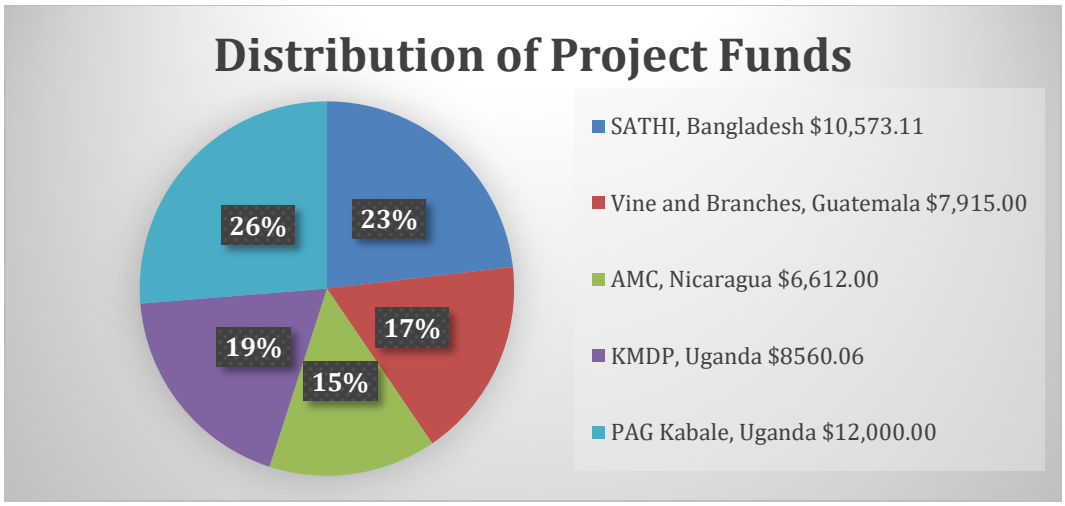
The conference was a great exposure opportunity for the Uganda team to meet with others who are implementing CA programming and to share experiences. Based on our action plan, partner staff are excited because they now have a better understanding of the soils in the farmers' fields. All of our partner field staff said something like this after attending the conference: "I am now in a better position to make recommendations and to advise individual farmers on the specific things they need to do to rectify conditions in their fields. I am even able to tell farmers when their crops are deficient of some of the important nutrients and when their soils are acidic or low in organic matter."

—Raymond Mutava, World Renew Uganda Country Consultant

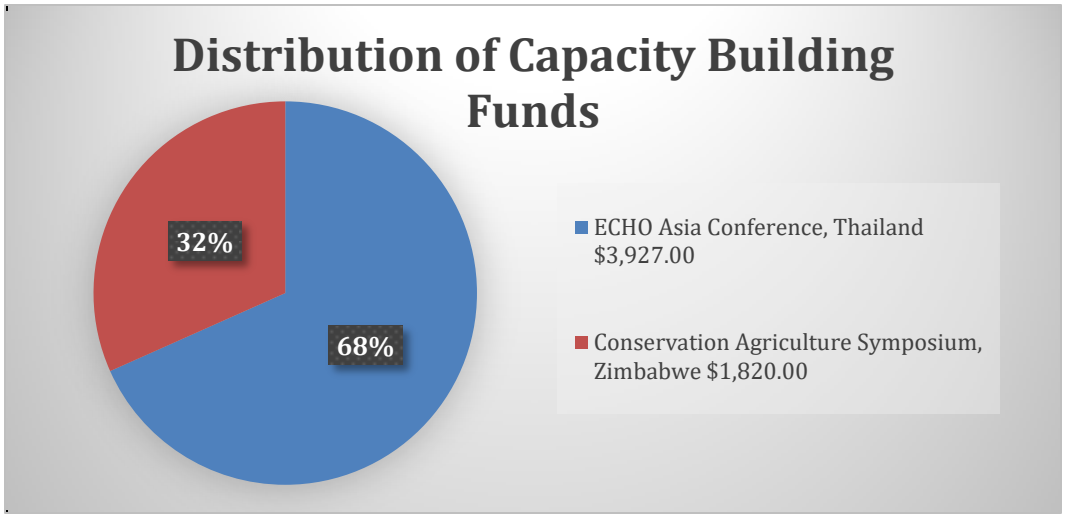
8.0 Grant Allocation Summary

A total of $51,407.17 of SAFS Grant funding was dispersed in 2015-2016.

Grants totaling $45,660.17 funded five projects in four countries. SAFS Grant-funded programs directly impacted 851 participants and indirectly benefited over 4,500 people, enabling communities to discover innovative agriculture solutions to help them achieve long-term food security.



In addition, $5,747.00 funded participation in two learning and capacity-building events, directly benefiting World Renew staff and partner agencies in three countries.



9.0 Conclusion

As in years past, the SAFS Grant has resulted in the achievement of great progress in 2015-2016 as ambitious small-scale farmers apply newfound skills and knowledge to provide for their families and share with their neighbors. World Renew and its partners have learned firsthand that often the best learning happens at a peer level, so it is vital to invest in helping farmers share their successes with others. Giving farmers, often viewed as being at the bottom of the socioeconomic ladder, the opportunity to serve as teachers and leaders in their field, can be incredibly transformative. This is particularly true for women farmers, who often face even greater institutional and cultural barriers than men, and in 2015-2016 women made up 61 percent of the participants directly involved in the SAFS Grant programming.

When individuals see that their hard work, discipline, and perseverance are worthwhile, whether the results are improved food security, greater trust in the community, or more diverse economic opportunities, lives are transformed in meaningful and lasting ways. Yet, as with the case of Nicaragua showing the dire effects of climate change on agricultural production, there clearly remains an urgent need to continue to find ways to grow food in the midst of unpredictable weather patterns. Innovative work must continue in order to serve people who are vulnerable around the world.

In addition to the challenges of external climatic forces, internal complications can also result in a project not achieving its goals, and the SAFS Grant provides opportunity for such learning by mitigating some of the risk involved with experimentation. The case of the greywater project in Guatemala showcases an innovative program with great potential that failed to fully achieve expected results; important lessons were learned about researching local resources for project materials, establishing a personal investment from participants, and maintaining energy and excitement in the project.

In general, however, funding through the SAFS Grant has not only had an incredible impact on project participants but has also allowed World Renew's partners to gain grant management experience, resulting in their ability to successfully apply for grants with funding institutions, creating even further impact for the future. As mentioned above, both PAG Kabale's soil fertility restoration project in Uganda and SATHI's composting and kitchen gardening project in Bangladesh have recently received funding through the Foods Resource Bank so that the excellent foundations that have been built by these SAFS projects can have broader impact.

The opportunities provided through the small grants of the SAFS Grant program have been highly valued by World Renew and its partners, providing opportunities for engagement in new and innovative projects, and energizing World Renew's work in agriculture by providing finances for creative experimentation. The ultimate goal of the SAFS Grant remains to provide World Renew and its partner organizations the opportunity to test and improve new agricultural processes or technologies, and to apply the needed support and guidance to achieve success, in order to improve food security and livelihoods for vulnerable smallholder farmers around the world.