CPWF Small Grants Program

Most Significant Change Stories

CGIAR Challenge Program on WATER & FOOD

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Contents

Introduction

CPWF started with a major investment 'first competitive call' that led to contracting of over 30 large research-for-development projects starting in June 2004. As these projects commenced, CPWF management became aware of three needs that could be answered by a relatively modest investment in locally-focused small projects that concentrated on achieving adoption by small farmers of improvements in the way 'water and food' were handled. These were:

- Immediate examples of the impact that could be achieved by working on better water productivity for smallholders – rather than waiting several years for the first results of the major, large research projects;
- Stronger involvement of national NGOs with CPWF, including the opportunity to connect those in large-project research more the reality on the ground by meeting people involved in development; and
- Better understanding of how adoption of 'water and food' improvements occurs.

Subsequently, CPWF contracted 14 *Small Grants for Impact* covering seven of the benchmark basins in early 2006 which were operated for periods of 12 to 18 months. For a total investment of under USD 1 million, less than the equivalent of a typical three-to-five year CPWF research for development project in Phase 1, each project value between USD 39,900 to 75,000, the small grant projects made significant contributions:

- to identify water and food technology for specific end-users (thus showing the potential of CPWF research in general);
- to better understand adoption processes;
- to stimulate research by NGOs and
- to better connect CPWF researchers to the reality of development processes.

Four of the small grants were outstanding in their contribution across all four of these criteria; six others made significant contributions to one or more, representing a high success rate for the original investment. The quality of many of the 126 eligible proposals received was sufficient to have identified at least 20 more projects suitable for immediate funding at that time in late 2005. Unfortunately, other demands on CPWF funding and priorities on research set by the Consortium Steering Committee made it impossible to support these. (Woolley, 2010).

As part of their completion report, CPWF asked the small grants project to use a qualitative monitoring and evaluation tool, called and known as Most Significant Change Stories. This working paper is a compilation of the most significant changes stories reported by each of the small grants projects in their final completion reports.

We would like to thank all contributing authors who captured and documented these changes.

Participatory water resource planning and development for economic sufficiency through learning alliance approach in the northeast of Thailand (SG501)

Most Significant Change: Central and government acceptance of local wisdom

The most significant change is central and government acceptance of local wisdom as basic guideline for policy and practices. As sufficiency economy is the key concept of water resource development, the impact has made planning and activity on water resource development for better livelihood. Moreover, research community is also beneficial to learn and work more effectively for development programs. Therefore the scaling out is on the way for wider water resource management for sufficiency economy.

As such summary of impacts were as follow:

1. Water law at DWR
    a. Integration of local requirement from learning alliances to subsidiary water law, such as component of watershed committee and national water resource committee, and sufficiency levels of water resources for both domestic and productive uses.
    b. Defining roles of local and national water resource committee,
    c. Power balance and sharing of committees at different hierarchies

2. Farm ponds for sufficiency economy at Land Development Department
    a. More flexible farm ponds supported by Land Development Department under one million farm pond project
    b. Local design inputs into practical uses of farm ponds for sufficiency economy
    c. Improved criteria for distribution of farm pond project

3. Integrated water resource management at DWR
    a. Acceptance of local wisdoms into plan and practices
    b. Integration of best practices at local level to national water resource management design

4. Water resource policy at RID and DWR
    a. Practical application of sufficiency economy into plan and practices
    b. Wider acceptance of local knowledge and best practices into designs and working approaches

5. Integration of integrated water resource management into national research agenda of National Research Council of Thailand (NRCT)
    a. Higher emphasis on integrated water resource management research for development
    b. Higher budget allocation for research project
    c. Application of sufficiency economy impact into project evaluation
    d. More involvement of local administration into research and development plan at both local and national scales

Demonstration and documentation of innovative market-based strategies to realize agricultural income through increased on-farm water productivity and market integration (SG502)

Most Significant Change: Improving livelihoods of farmers: Plans for the future

Name: Mrs. Chum Mout
Date: 2006 dry season
Location: Tachey village, Kampong Chamlong Commune, Svay Rieng district, Svay Rieng province, Cambodia

Description:
At 52 years of age, Mrs Chum Mout is the household head of a family of five. Prior to her involvement in the project, her family were mainly subsistence rice farmers, growing rice on 9,000m^2 of land for family consumption. They also grew vegetables such as leafy vegetables and wax gourd on 600m^2 of land surrounding their house; however this only provided them with an income of $40 per year.
In January 2007 she was visited by a private extension agent (PEA) who explained to her the purpose of the project. She became a willing participant as she realised that she was not utilising her land as efficiently as she could, mainly because she lacked the technical skills required. The PEA explained to her the results of the market assessment, and she decided to grow one of the high value crops identified - mustard green. After receiving training on horticultural skills, and purchasing good quality inputs such as seed and fertiliser from the PEAs, she began growing mustard green as a cash crop.
She now grows mustard green twice a year, at the beginning of the dry season and at the end of the dry season, on both her house block and her rice fields. Prior to this project her rice land was not farmed during the dry season. She now farms 1,500m^2 of land twice during the dry season.
The PEAs explained to her that she had two main avenues to sell mustard green, either fresh at the market or pickled. Based on this information she decided to pickle 60% of her harvest because she could sell this for twice the price as fresh ($0.40-$0.50/kg), and sell the remaining 40% fresh for $0.20-$0.25/kg.
Mout said that she can see some definite improvements to her livelihood this year, compared to last year, thanks to support and assistance from PEAs who taught her how to grow vegetables effectively, and brought to her attention new crops to grow that can earn her a higher income than the vegetables she traditionally grew. This year her family earned $200 from growing mustard green. 'I now have enough money to feed my children all year' she says.
After witnessing the benefits and value of drip irrigation on a demonstration site run by her neighbour, she now plans to buy a 500m^2 drip irrigation kit in the forthcoming dry season to save her time and labour watering.

Significance:
Mrs Chum Mout's story is similar to many farmers in her area; she has land but lacks market information and technical know-how on how to use it efficiently. This story is significant because it highlights gradual steps farmers can take to improve their income. Chum Mout invested very little financial resources in the last two seasons, with the exception of purchasing better quality inputs. She did however receive training and market information which netted her a substantial profit over her traditional farming practices. She feels she has made enough money to purchase a drip irrigation kit for the following season. Furthermore, it highlights the benefits of demonstration sites as a social marketing tool. After seeing and talking to farmers demonstrating drip irrigation she saw for herself the benefits it brought them and was convinced that the initial financial input could be translated into profit and time and labour saving.

Demonstration and documentation of innovative market-based strategies to realize agricultural income through increased on-farm water productivity and market integration (SG502)

Most Significant Change: Scientific contribution: More than just water productivity

Name: Nathalie Baxter
Date: 2007 dry season
Location: Svay Rieng Province, Cambodia

Description:
Data from 36 drip irrigation field trials conducted in the 2007 dry season were analysed to assess the effectiveness of incorporating drip irrigation systems into market strategies to enable poor farmers to earn a profitable income as commercial vegetable producers. Farmers participating in the trials included drip irrigation as the only new technology; everything else was per their traditional farming techniques. They could, however, choose what vegetables to grow based on market assessment information (i.e. high value crops or common vegetables that they were familiar with).

Drip irrigation kits cost farmers an extra $2.98 per crop cycle per 100m^2 of irrigated land. 42 percent of farmers participating in the trials earned enough net income using drip irrigation to justify the cost of using drip irrigation.

The biggest impact on profit margins occurred when farmers combined drip irrigation with improved fertiliser technology (FDP) and high value crops. Although the data set was small (4 field trials), the results indicate that 3 of the 4 farmers justified the cost of drip irrigation by significantly increasing yields over farmer practice. Although one farmer saw very little yield difference between drip irrigation and farmer practice, on average, even taking into account the additional cost of drip, farmers increased their yield enough to translate this into over a $2.50/100$m^2$ rise in income over traditional farmer practices.

For farmers to become competitive commercially-oriented producers they need to employ strategies that include improving soil fertility, combined with growing vegetables with a high market price, before the additional cost of using drip irrigation can be translated into profit.

Significance:
These outcomes are a significant advancement in our understanding of appropriate market strategies for small-scale farmers in Cambodia. Prior to this project, it was assumed that lack of reliable water was preventing farmers from becoming commercial producers. This study has assisted us in understanding that low soil fertility, low market prices, and lack of technical skills are also major constraints that need to be addressed before the benefits of improved water productivity can be felt at the farm gate.

Demonstration and documentation of innovative market-based strategies to realize agricultural income through increased on-farm water productivity and market integration (SG502)

Most significant change: Building networks: PEAS building networks between farmers and export markets

Name: Ros Kimsan and Sieng Kan
Date: 2007 dry season
Location: Svay Rieng Province, Cambodia

Description:
At the commencement of this project Svay Rieng province was not known for it's chilli production. Chilli was grown successfully over the border in Vietnam, and imported and sold in the local Svay Rieng market. Selling for around $2.50 per kg during peak demand times and providing a 3 month harvest period, this crop has high potential to greatly increase farmers' income. Although new to Svay Rieng province, chilli is not new to Cambodia, already successfully grown in a least two provinces in Cambodia. A local export wholesaler operating on the Thailand border in Bantey Meanchey province, subcontracts a local collector in Kandal province, near Phnom Penh, to purchase chilli from local producers. This project introduced three private extension agents (PEAs) operating in the project area to the Kandal chilli collector. The PEAs are now part of an established supply chain between the producers and the export market. Both farmers and PEAs are making good returns from the production of chilli.

Significance:
This story was chosen over three other similar success stories (drip irrigation supply chains, fertiliser briquette supply chains and PEAs), as the building of this network had direct measurable impact on farmers' incomes.

How the change came about:
A market assessment and value chain analysis was the key to the introduction of chilli to Svay Rieng farmers.

Conditions for Sustainable Adoption of Water and Moisture System Innovations in Nile River Basin: Case of Makanya Watershed in Tanzania (SG503)

Most Significant Change: Knowledge Sharing and Communication Strategy in Agricultural Water Innovation Systems in Makanya Catchment, Same District, Tanzania

Background of the story

The story is a synthesis of several stories given by farmers from the study villages. This story was compiled by researchers Mr. Masuki and Mrs Shetto in the courses of project implementation. The original stories are appended as Appendix B in Annex I of the CPWF Completion Report– CPWF SG 503 FTR 2007.

Description:

- CPWF SG 503 has enhancd adoption of these innovations to wider communities in the Makanya catchment with the aim scaling up novel innovations in the Nile Basin. Past studies indicated that one of the constraints to adoption of Water and Moisture Systems Innovations (WMSIs) has been limited knowledge of the innovations and its benefits.
- A knowledge sharing and communication strategy was developed in collaboration with partners institutions including farmers, District Authorities and Civil Society Organisation to promote WMSIs. Analysis of the current knowledge, attitudes and practices (KAP) of different partners were carried out as a basis for overcoming barriers to adoption and provision of enabling environment to enhance adoption of WMSIs.
- Knowledge sharing and learning was carried out through focus group discussions, dialogue, participation of farmers in Agricultural Show Nanenane (40 farmers); exchange visits in areas with successes in practicing WMSIs, i.e. Lushoto (10 farmers) and Babati (15 farmers).
- Farmer training has enhanced more farmer to seek opportunity to join project activities where by a total of 83 farmers (40 from Malindi and 43 from Mhero) were trainied on banana technology;
- As a result field visit in Lushoto, more farmers have joined Mhero SACCOS which increase a number of membership in Mhero SACCOS.
- 40 participants including farmers, extension workers from mid- and lowland Makanya catchment were trained on conservation agriculture as a result of study visit made to Karatu.
- 10 Farmer learning groups were established as a result of CA training. These groups involve more than 130 farmer who meet once every week for experiential learning in in the field (FFS). Some groups have prepared draft constitutions to acquire legitimacy with the district authorities, for easy access to credit facilities.
- Preliminary observation indicate that in less than six months there has been rapid adoption of WMSIs such as terraces and contours in the five villages whereby more than 189 farmers (an addition of 45 new farmers this year) who have constructed 1876 terraces (an addition of 758 new terraces this year). However farmers are increasingly coming up to construct more terraces as days pass by.
- Production of high-value crops (bananas and vegetables like tomatoes, onions) will increase productivity of scarce water resources. (land area covered and cost: benefit analysis will be carried out as part of the on-going monitoring and documentation process (refer progress report). WMSIs improves rainfed agriculture as a measure to address challenges posed by climate change has the potential of benefiting about 10,000 farm families in the Makanya Catchment.

Why is the story significant?

- Enthusiasm shown by farmers to adopt technologies that have been there over 50 years as a result of use of participatory processes in knowledge sharing and learning.

Katalysis: enabling endogenous potential for improved management and conservation of water resources in semi-arid Andean ecosystems (SG505)

Most Significant Change: Development contribution

The project strengthened a network of innovators who demonstrated how water harvesting combined with local biological potential could enable a family to improve the stability of production and to increase incomes. This experience was concretely described in individual stories, for example of Alfonso and Olga Juma of the village of Lavanderos, Ambuqui.

Water harvesting is a very new concept for many Andean farmers, in particular those who grew up in areas where water was once plentiful. Nevertheless, due to the effects of resource degradation, increased demand for water, and changes in climate, rural families such as that of Alfonso and Olga are facing new challenges. They must quickly innovate if they are to survive. Previously worked with groups of farmer innovators to address soil fertility, pest management, and reforestation concerns. As a result, we had gained much appreciation for 'people's science', meaning innovations that spontaneously emerged from local socio-environmental contexts, as viable opportunities for development. Nevertheless, we had not yet applied such approaches to water harvesting and micro irrigation.

For this project, we hypothesized that farmers who faced similar challenges innovated in ways that could be mutually useful. Further, we believed that the diversity of social and environmental contexts in rural areas could produce an equally rich diversity of novel ideas capable of catalyzing transitions towards new ways of managing water. In our search for how to encourage transformation, we consulted the thoughts of an established group of farmer innovators and invested project resources. We financed initial encounters in the form of cross visits among farmers who were facing similar challenges with water scarcity. The goal of those exchanges was to identify novelties that could represent a catalytic force of change. The project then financed visioning workshops in localities, during which participants discussed field trips and produced dream maps of the future. We then collectively supported the implementation of those dreams, which involved the creation of revolving investment funds and *mingas* (Kichwa for "group work parties"), during which participants worked together to install and test different innovations such as catchment designs, materials for tanks, and filtering and distribution systems. This usually involved a training visit from a farmer who had generated a relevant novelty elsewhere as well as backstopping from a technical expert who planted generative and challenging questions along the way. The project then supported follow-up visits across farms to document and discuss further innovations, such as the utilization of water and biological resources as a means to "capturing energy and wealth." This included project participants as well as a growing array of interested parties from other organizations and areas.

Participants such as Alfonso and Olga demonstrated the benefits of this activity. Pointing to the dry, barren fields that surrounded his now green farm, Alfonso explained that previously he did not know how to produce from his farm, so he did menial work in the city, which provided about USD 700-1,000 of income per year. Following a study tour of a farmer who harvested water, his neighbours and he "captured the vision". They decided to join force and invested about USD 600 in hoses and assorted materials to bring water from about two kilometres away to their farms. They dug storage ponds of about 10,000 litres each that they lined with clay or geomembrane. They also experimented with micro-irrigation, primarily filters, low volume sprinklers and drip tapes to maximize efficiency. Alfonso explained why: "We've learned that by using tubes [rather than open canals] you can [effectively] double and even quadruple your rainfall." Returns were substantial.

Once Alfonso and Olga gained access to water they could grow alfalfa. With the alfalfa, they produced *cuy* (guinea pig), which in turn produced manure for the soil. With money earned from the *cuyes* they paid back their initial $200 investment in materials in less than six months. Now they continually manage a population of 300 cuyes, that are worth about $5.00 each or $1,500 in all. That is about twice of what Alfonso used to earn in the city. This seemingly small transformation permitted Alfonso to stay home and

invest his time in his property and family. With the manure, he planted 75 mango and avocado trees. Within 18 months his farm became a green oasis. As per Alfonso, “My farm used to be barren of plants. My biggest problem today is that I’ve run out of land to cultivated.” During a recent visit, Alfonso had purchased two additional hectares of dry land from a neighbour that would become part of his growing oasis. Within its 18 month time period, Katalysis helped over 50 families produce such locally financed examples. Provided connections with broader development activities, we expect such examples or seeds of innovation to continue to grow across the landscape.

Katalysis: enabling endogenous potential for improved management and conservation of water resources in semi-arid Andean ecosystems (SG505)

Most Significant Change: Scientific contribution

Much of the basic knowledge and technology employed in this project existed, at least in the minds and storehouses of *técnicos*. The problem was that it was not part of local knowledge system, and as a result it stayed "on the shelf". A central scientific proposal of this project was to shift knowledge production from external to more local sources of generation. From our perspective, the most significant scientific contribution was a small but strategic shift from Mode 1 (expert-led) to Mode 2 (people-centred) knowledge production (as earlier described in table 1) as applied to water and its integration with food production. A concrete product of this activity was the Katalysis methodology (described in figure 1), that permits a more effective mediation between expert and farmer cultures for enabling locally led innovation with water and food production. While such conceptualisation may lie on the margins of conventional understandings of science, its relevance to improving water management and food production is hard to deny.

Katalysis: enabling endogenous potential for improved management and conservation of water resources in semi-arid Andean ecosystems (SG505)

Most Significant Change: Institutional level contribution

We found that the concept of water harvesting generally was not part of the development discourse in the Highlands Andes. As a very strategic institutional level contribution, the Katalysis project effectively inserted the novelty of water harvesting into broader networks of rural development actors in the region. This was most clearly achieved in Ecuador, where we were able to introduce the themes of Katalysis to the members of the agroecology collective. Likewise, we introduced numerous actors of agroecology movements of Peru and Bolivia to the theme. As a result, the project in Ecuador visited well over one thousand visitors, and an increasing number of organisations speak of water harvesting and have incorporated it into designs. Creating the conditions for endogenous designs has been a greater challenge. Likewise, we have promoted the concept in multiple regional fora, but the implications involve deeper institutional changes that were beyond the capabilities of the project. Nevertheless, the different agroecology movements and PROLINNOVA have embraced the theme and will be carrying it forward in the future.

Improving catchment and use efficiency of water for high-value dry season crops (SG506)

Most Significant Change: Contribute to make life easier for the ultimate beneficiary: Sweet potato farmers at Zanlerigu get around a nagging problem

Person reporting Story: Francis Kwame Padi
Project / Basin: SG 506 / Volta Basin
Date when change occurred: June 2007
Location of event: Zanlerigu, Talensi-Nabdam District, Ghana

Description
In the Zanlerigu community of the Upper East Region of Ghana, as is much of the Region, sweet potato is a staple root crop. Over the past decade production of the crop has remained the same due to unavailability of planting materials when needed. The six month post-rainy season limits farmers' options for producing planting materials in adequate quantity and quality.

Solution to this longstanding problem started in February 2006 when the SG 506 Project introduced low-cost ferro-cement tanks as reservoirs for domestic water harvesting in 10 households that serve as pilot sites. Each household harvested approximately 20,000 litres of water and used this to produced sweet potato vines during the post rainy season in 2007 on 100 m^2 land. Farmers were given drip irrigation kits which they mounted themselves after some training was given by a water harvesting expert from the Winrock International, an NGO.

For the first time in many years, beneficiary sweet potato farmers in Zanlerigu had adequate vines of high quality of their choice variety for planting. Mr. Samuel Naam, a sweet potato farmer at Zanlerigu summed up his excitement to the project team on a field visit "I call myself a farmer now. I am planting when I know its time to plant. I would not go begging for vines anymore"

Why story is significant
This story illustrates the use of an age-old practice (domestic water harvesting) to alleviate a key bottleneck (lack of planting materials) to food sufficiency at a local level. This requires little capital investment and has potential to scale out to other communities rapidly.

Key factors underpinning success
This activity under the Project was particularly successful because it tackles two problems that are of relevance to the local community – lack of domestic water and lack of planting materials. It was therefore not difficult for the beneficiary households to appreciate potential benefits and participate actively in the Project.

Constraints
Though modest investment in cement is required for the ferro-cement reservoirs, some non-beneficiary farmers indicated that raising the capital might be a problem. The cost of 20,000 litre reservoir capacity is approximately US $400.00

Recommendations for future research
Comparative cost/benefit assessment of use of harvested water for high value crops (eg. Onions, pepper) compared to use of harvested water for staples as sweet potato. Will income from post-rainy season onions (for example) more than compensate for loss of staple starch food production? And what are the social implications for the typical household?

Improving catchment and use efficiency of water for high-value dry season crops (SG506)

Most Significant Change: Making a scientific contribution: Groundwater abstraction through cement-cast hand-dug wells moderated farmland degradation in two communities in northern Ghana

Person reporting Story: Cecil Osei
Project / Basin: SG 506 / Volta Basin
Date when change occurred: February 2006 to February 2007
Location of event: Anayare and Sumbrungu, Upper East Region, Ghana

Description
Farming communities in the Upper East Region of Ghana rely on post-rainy season cropping in the hydromorphic lowlands for a large portion of their farm income. Reliance on traditional methods of groundwater abstraction in the form of rampant excavation of the landscape in rivulets, streams, and the farmland itself leads to high annual loss of topsoil, plant nutrients and silting of water bodies downstream.

As an improvement on the temporal hand-dug well method of water abstraction, the SG 506 demonstrated the utility of permanent hand-dug wells using cement cast fortification. Nine wells were made in each of two farming communities, Anayare and Sumbrungu for pilot scale demonstrations to irrigate tomato production fields of farmers' groups. Wells dug to 8 m depth and I m width retained water even during the driest periods of the year when all traditional hand-dug within 2 km radius of the pilot sites had dried up. Beneficiary farmers using the permanent wells did not have to excavate their farmlands to access groundwater, had larger farm sizes and spent fewer hours irrigating a production field. On the whole, farmland degradation in terms of the rampant excavation of the land was absent on the farms of beneficiary farmers' groups compared with non-beneficiary farmers' plots.

During field days organised for farmers within the vicinity of the pilot sites, beneficiary and non-beneficiary farmers' groups appreciated the necessity to use permanent wells to ensure sustainable production in the lowlands.

Why story is significant
This story provides evidence that the hydrogeology of most parts of the Upper East Region support high groundwater recharge rates. Harnessing this potential for agriculture is critical in poverty alleviation programs and sustainable food production in the densely populated communities of the Upper East Region.

Key factors underpinning success
Success in demonstrating permanent hand-dug wells was favoured by the high groundwater recharge rates, farmers groups' willingness to participate actively and the Project's approach of encouraging the active involvement of all beneficiary individuals.

Constraints
On some parcels of land, we observed that the farmers were not necessarily the landowners. Once adequate water was provided though permanent wells (thus avoiding the drudgery involved in water acquisition for dry season farming), some landowners may have the tendency of going back on their tenancy agreements, and taking up crop production directly. Under the current research project, we encountered this situation at the Anayare site. Landowners realised that with a reliable source of water, the major obstacle to production has been overcome and might increase the cost of land lease, or refuse to lease at all. Yet, landowners do not necessarily have the capacity or are unwilling to develop these water resources for agriculture.

Recommendations for future research

How will existing tenancy agreements change with the involvement of governments, non-governmental organizations, etc., in assisting farmers' groups develop reliable groundwater resources for dry season farming? How will the perceived changes guide the form of assistance landowners and/or farmers groups receive in developing groundwater resources?

Improving catchment and use efficiency of water for high-value dry season crops (SG506)

Most Significant Change: Open forum discussions encourage non-participating households in Zanlerigu to self-finance the construction of water harvesting reservoirs

Person reporting Story: Francis Kwame Padi
Project / Basin: SG 506 / Volta Basin
Date when change occurred: June 2007
Location of event: Zanlerigu, Upper East Region of Ghana.

Description
Self-help spirit is typically lacking in most farming communities. Non-beneficiary households are usually reluctant to invest in engaging in an innovative practice when other neighbouring households are selected as pilot tests sites. This attitude has tendency of restricting the out-scaling of a Projects outputs.

The SG 506 selected ten households in the Zanlerigu community of the Upper East Region as pilot sites to test and demonstrate the applicability of domestic rainwater harvesting into ferro-cement reservoir units for sweet potato planting material production. To encourage households not selected as pilot test sites to take up the practice, the Project organised several open forums to discuss a self-financing plan. Drawing on the options available for improving a household's livelihood assets, each forum discussed various scenarios of financing the construction of reservoir units through, for example, sale of livestock units, proceeds of crop harvests or financial help received from close relations working in big towns and cities. Non-beneficiary households were reluctant initially to commit funds to construct the reservoir units although the community was unanimous in acknowledging the benefits of the innovation. Though beneficiary households received five 4,000 litre capacity reservoir units, non-beneficiary households were encouraged to invest in constructing single reservoir units per year, and to construct additional units each time their financial circumstances permit. By the end of the Project period, two non-beneficiary households independently self-financed the construction of a reservoir unit. Indications for the construction of additional units in these households were obvious from discussions the households had with the trained artisans.

Why story is significant
In most farming communities, it is difficult to get farmers willingness to commit financial resources in adopting an innovation. This story illustrates a change from the usual lack of self-help to active involvement and ownership of an innovation.

Key factors underpinning success
Active participation of the extension staff of the Ministry of Food and Agriculture during the Open forums, availability of trained artisans to construct the reservoir units, and demonstrable benefits in terms of potato vine production in the beneficiary households were critical factors that persuaded non-beneficiary households to invest in the innovation.

Constraints
Cash obtained during the post-rainy season from sale of farm proceeds is the major source for investing in constructing the reservoir units. However, benefits can only be obtained in the next rainy season from harvesting of rainwater. This time-delay in accessing the returns on their investment was a major snag in encouraging further investment in the construction of the reservoir units.

Recommendations for future research
A framework for instilling self-help attitude in rural/farming communities need to be aggressively pursued. The involvement of non-governmental organizations in community projects may be of value.

Associated cropping and enhanced rainwater harvesting to improve food security and sustainable livelihoods of peasant farmer associations (Santander - Colombia) (SG510)

Most Significant Change: Agro-bioversity, rainwater harvesting and community empowerment

Person reporting the story: Adam J. Rankin
Basin: Andean system of basins
Location where it happened: Soto Province, Department of Santander, Colombia
Period of Time: 2001 - present

Description - The Story:

- Monoculture production systems have gravely affected food security and caused environmental impacts and loss of cultural identity in peasant farming communities.
- Farmer exchange meetings to re-live the history of the landscape and the changes in food production patterns (collective food banquets). Farmers identified niches of traditional seeds in their communities and recovered associated knowledge (inter-cropping and cultural use).
- Consolidation of a Campesino School of Agroecology with the participation of men, women and youth (50 localities - 8 rural municipalities, Soto Province) - monthly itinerant meetings where seed-exchange, soil and water conservation and collective food offerings are central issues.
- Community-to-community exchanges at regional and national levels - participation of farmer associations, indigenous and afro-descendent communities, emphasis in cultural identity, popular knowledge and food autonomy.
- Seed banks established - vegetable plots, traditional hen raising, inter-cropping (beans, yucca, maize, fruits, vegetables, medicinal plants, etc.). Development of food processing and social marketing initiatives - wine, milk products, handicrafts, etc. Dissemination of testimonial results through alternative community media resources.
- Launch of a water campaign in rural area of municipality of Lebrija affected by contamination and extensive desertification. Women's association and farmers begin to enact their collective right to water. Particular attention is given to rainwater harvesting and gender empowerment. Links to national campaigns and networks on food security, biodiversity and water issues.

Why is the story significant?

Recognising the potential of **diverse sustainable agriculture** has shown to be a viable alternative to the environmental degradation caused by mono-crop (slash and burn) production. A collective awareness of the historical transformation of the landscape and its people, has motivated local farmers to recover traditional seed varieties as food-crops and re-adopt crop association and agroecological farming practices. The story also highlights the importance of **constructing participatory solutions** to secure sustainable water access in rural areas, motivating the local communities to enact their collective right to water. Particular attention has been given to **gender equality**, and a Women's Peasant Association is a leading partner in decision-making and implementation.

What were the critical factors that led to the change?

- We have demonstrated innovative educational and social organisation strategies which encourage active farmer participation and capacity building. Our experience has shown that scale is not necessarily an obstacle to technology transfer. **Community-to-community partnerships** have been an innovative method to share technical skills and operational structures, where the communities are self-empowered (workdays, knowledge exchange and material resources).
- Women and youth have been more exposed to the impacts of water contamination and scarcity in rural areas, as the majority of households lack access to basic sanitation and safe drinking water. This has been a **strong driving-force** to motivate the water campaign; women have gained communication skills and political-standing in their communities, and have contributed to building a more dynamic, self-dependent and unified process.

- The farmer associations have experienced at first-hand a set of guiding practices to enhance and **conserve water within agro-ecosystems**, and have seen genuine improvements in food security, family nutrition and community well-being. Priority has been given to promoting agro-ecological and rainwater harvesting practices that permit both soil conservation and efficient water use (low-tillage intervention, plant-soil cover, organic fertilisation, infiltration ditches and terraces).
- To disseminate experiences and testimonial results, we have been developing different **community media resources** such as radio programs and magazines on the issues of agroecology, food security and water conservation. Priority has been given to communication tools that are produced by and destined for the people of the region, with the objective as well to promote a better dialogue between urban and rural society.

What were the constraints?

- The process of **community - institutional dialogue** is still deficient, although it has been possible to visualise integral policies and social mandates to improve water and food security.
- Fundamentally what is needed is genuine forms of co-operation and **political will** to implement far more outreaching plans to tackle water and food insecurity. The empowerment of women and farmer associations play an essential role in this process.
- The **rural youth population** are increasingly vulnerable to a series of interrelated threats that include the socio-economic crisis of rural families, influence of urban-life and mass-media, government abandonment of rural education and the countries ongoing political conflict.

What are the future implications for action?

- We propose to continue developing strategies to **counter the barriers** which limit the integration of community participation and gender equity in water management within the region. Influencing policy and decision makers, as well as establishing local users rights, are key to establishing sustainable community development.
- The methodology of the **Campesino School of Agroecology** gives particular importance to farmer-to-farmer dialogue within the local community and across rural municipalities; this needs to be extended to facilitate collective learning, social organisation and dissemination of appropriate technologies and sustainable agricultural practices on a basin-scale.
- It is important to continue the process of **systematisation of community results** related to the benefits of traditional seed recovery and its impact on improved water and food security. It is also interesting to study the benefits related to agro-ecological production practices, in terms of: reduced evaporation, improved nutrient uptake, mineral enrichment and biological activity of soils, increased water infiltration and erosion prevention, impact of plant-soil and tree cover, etc.

Food Security in Southern Uganda (SG513)

Most Significant Change: Improved Livelihood: Self food reliance

Name of person reporting the story: Josephine Kizza
Project: Food Security in Southern Uganda
Date when change occurred: June 2007
Place where the change occurred: *Masaka* and *Rakai* districts – Southern Uganda

Brief description of the story:

- Subsistence farmers formed three cohesive groups of each thirty members with functional leadership.
- Trained in soil and water conservation with a prime aim of food security using integrated approach with water management as a key elements
- Practical demonstration in water harvest, soil moisture retention and soil erosion reduction efforts
- Communal plant nurseries were established, one for each group for plant propagation.
- "On farm advice" responded with individual needs and catered for the interest of the most timid participants
- Appropriate technology of using polythene to line water storage pits fed from surface run off, covered with wood logs and soil spread over to allow growing of vegetables with shallow roots

Significance:

- Linking environment awareness with economic development. Participants have adopted integrated organic farming practices that are ecologically friendly and further embraced agro-forest practices as part of efforts to improve the depleted soils.
- Transformation of ninety households from depleted homes into viable families meeting their basic needs and combat of transitory food shortages.
- Water harvest and improved soil moisture retention as a counter solution to the generally becoming unpredictable rainy seasons
- The holistic approach to subsistence farmers who are the prime environment destructors, makes it possible to conserve the soil, trees and maximum use of natural precipitation through an informed population mass
- Replication of technologies by the neighbouring communities.

Critical factors that led to the change:

- Training of participants in organic farming and subsequent adoption
- Farmers control over planting materials
- Promotion of fruit trees that are linked directly to household food and income needs
- Skills of group leaders
- Water harvest and control of soil erosion

Constraints:

- Training of illiterates alongside those who can write
- Continued reliance of firewood as a source of energy
- Lack of animal manure, a key component of compost making
- Participants not used to sharing of experiences and innovations

Future Implication for action:

- Assess the effects of tapping surface run- off water to the neighbouring communities down stream.

Food Security in Southern Uganda (SG513)

Most Significant Change: Scientific contribution: Water and organic farm resources

Name of person reporting the story: Josephine Kizza
Project: Food Security in Southern Uganda
Date when change occurred: June 2007
Place where the change occurred: *Masaka* and *Rakai* districts – Southern Uganda

The story - Brief description:

- A combination of organic compost, water management and contour cultivation increased traditional food production more than double per acreage
- Application of compost alone recorded substantial crop yields both in rainy season during drought

Significance:

- Integrated approach to small holder farmers with organic farming, water and soil conservation was a key factor to increased crop harvest per acreage
- Organic matters were a key element to water holding capacity of the soil and subsequent improved food crop production.

Critical factors that led to the change:

- Farmers were used to organic farming but only lacked the technical knowledge
- No extra financial cost but commitment to work Practical trainings
- Activities were linked directly to household income and food production
- Knowledge in group dynamic for team work
- Reduction of rapid run off and absorption of rain water in the gardens
- Changes were based on available natural resources

Constraints:

- Practicals were labour intensive
- Close supervision
- Most feasible on small scale 2 to 3 acres of land