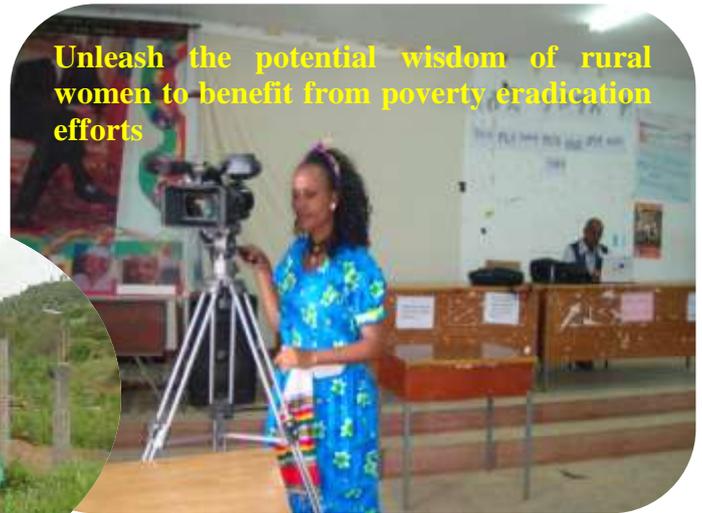


Poverty Action Network in Ethiopia (PANE)
PROMoting Local INNOVation (PROLINNOVA–Ethiopia)

**Strengthening Resilience to Change:
Combining Local Innovative Capacity with
Scientific Research (CLIC–SR)**



Unleash the potential wisdom of rural women to benefit from poverty eradication efforts

**Field visit report, Tahtay Machew District (Axum,
Tigray Region), 30 August to 8 September 2014**

Gebeyehu Woldemichael
PROLINNOVA–Ethiopia Country Platform Coordinator

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- Mr Kidu Gebre Meskel, Crop Research Director, Axum Agricultural Research Center
- Mr Maereg Assefa, Assistant Researcher, Axum Agricultural Research Center
- Ms Kwanite, Apicultural Expert (Tahtay Machew ARDO)
- Mr Luel HaileSilassie, PROLINNOVA–Ethiopia Axum Platform Coordinator

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1. Introduction

This report provides the summarized narrative information on my second-round field visit made to areas around Axum on 30 August to 8 September 2014. The visit focused mainly on practical observation in order to monitor the progress of the project Combining Local Innovative Capacity with Scientific Knowledge (CLIC–SR) at the field level.

Initially, I had the chance to attend the second day of a two-day meeting organized by our CLIC–SR project partner, Best Practice Association (BPA), in collaboration with Axum University (AU), Axum Agriculture Research Center (AARC) and the Institute for Sustainable Development (ISD).

The meeting gave me a good opportunity to observe and garner lessons on farmer–researcher interactions demonstrated in classroom as well in field-practice sessions. Moreover, I was able to reschedule my visit, which was carried out at the community level in Tahtay Machew.

A summary of major information from my field visit is covered under the following headings:

- Overview of the meeting
- Renewed farmer–researcher partnership and synergies to reduce the big threats posed to honeybees
- The serpentine ditch, a local innovation that leads to livelihood transformation
- Joint experimentation that has encouraged rural women to strive toward their future
- Way forward for future action.

For the sake of further communication on the practical knowledge and study of the farmer–researcher interface, I have attached the profiles of some key contact persons, including CLIC–SR farmers, in Annex 1.

In general, my field mission to Axum have brought me a greater and lasting impression of local knowledge and understanding that has been learned from the farmer–researcher interactions. I do believe we are going to celebrate some good news in the PROLINNOVA International Partners Workshop to be held in Axum in April 2015.

2. Overview of the meeting

This meeting, organized by BPA, lasted two days: 30–31 August 2014. The meeting was facilitated by Dr Hailu Araya and brought together 42 persons from various organizations, including farmer groups, extension services, NGOs, research centers and higher-level government bodies.

The main objective of the meeting was to review the progress of farmer-led experimentation and share initial results to the wider community. I attended the second day of the meeting, which started with a recapitulation of highlights of the learning points from the previous day, which I missed because my flight was postponed on account of heavy weather.

Numerous CLIC–SR partners presented the results of their local-level experimentation on various practices and the lessons obtained from exposure visits carried out in various places, such as Nairobi.

Particularly, I was impressed when I observed the results of a joint experiment of BPA, AU, AARC, ISD and CLIC–SR farmers on egg shape as indication of the sex of chickens. During their experiment, the farmer-researchers explained that they recurrently allowed hens to hatch out eggs of different shapes and found that the round eggs became hens and pointed eggs became cocks. Their findings demonstrate that anyone can be sure to nearly 90% of getting cocks from pointed eggs and hens from round eggs.



Thus, I conceived the meeting as a forum for collaborative learning at which various CLIC–SR partners were able to share results and progress of local experiments. It was really very nice to notice women farmers displaying their discovery.

“Unleash the potential wisdom of rural women to benefit from poverty eradication efforts” M. Musia said (the camera woman during the meeting)



As the meeting drew to close, participants identified key points about future interventions:

- Establish farmer–researcher poultry network
- Form farmer–researcher interface for research on goat rearing
- Form market value chain network for honey
- Strengthen market information and improve communication among chicken producers
- Improve small-scale fish production through farmer–researcher joint experimentation
- Ensure the participation of women in joint planning and experimentation at the community level
- Strengthen knowledge sharing between scientific researchers and local farmers
- Strengthen market value chain for livelihood improvement.

3. Renewed farmer–researcher partnership and synergies to reduce the big threats posed to honeybees

During the first day of my field visit to the community level around Mai Berazio sub-village, Tahtay Machew District, I had the occasion to observe a group of CLIC–SR farmers, Tahtay Machew District ARDO extension workers and researchers from AARC designing participatory farmer-led research in faba-bean plots. This moment was my great opportunity to notice how farmers and researchers interacted. I held a very intensive group discussion for about 3 hours to know the process of their participatory farmer-led research. The story below tells about this farmer–researcher partnership for the wellbeing of honeybees in their words.

Farmers and researchers, we all in one proved honeybees are in a big threat posed by intensification in land use...etc..., said Mr Kidu Gebremeskel, Crop Research Director of Axum Agricultural Research Center.

“AARC is a research institute that puts great emphasis on farmers’ extensive wisdom and promotes farmer-led research in the Axum area of Tigray Region. Therefore, Axum has in many ways already become a model area for integrating farmers’ wisdom with scientific knowledge through joint work planning, implementation and measuring changes. As a result, Axum has been hosting a number of experience-sharing visits on farmer-led innovation for the last decade. But, as poverty pressingly gathers strength due to new events such as climate change, the need for renewed synergy and strategic partnership among farmers, researchers and multiple other stakeholders is not a matter of choice but one of the possible options at hand to do even better in fighting against poverty.

At this particular time, the presence of the CLIC–SR project in our area has played a central role in intensifying our farmer-led research promotion. The constant technical support and encouragement we have easily accessed from Best Practice Association (BPA) has further enabled us to underpin our relation and attachment with our farmers. We have organized a number of sessions where farmers and researchers share their practices and experiences, which have created a good working atmosphere and trust among different partners.

Recently, we – along with CLIC–SR farmers – have conducted participatory problem identification at the community level. We have all realized that our precious honeybees are in decline. **Farmers and researchers, we all in one proved honeybees are in a big threat posed** by intensification in land use, distance to food and water sources, pests, diseases, inappropriate use of agrochemicals and climate change, to mention a few. Moreover, knowledge gaps on the substantial pollination roles of honeybees in our community means that less priority is given to the honeybee issues in development initiatives. But honeybees are globally known as potential pollinators due to their unique characteristics and nature of their hairy bodies, which easily grasp pollen and convey it among flowers. The bees need a huge amount of nectar and pollen to feed their young.

Thus, they have to visit flowers recurrently to obtain the required quantities of food. At this point, they all concentrate on one species of plants at a time, when they serve as good pollinators on this account.

You have joined us at the right time. We are now at one of the CLIC–SR farmers’ faba-bean plots so as to design our farmer-led research where the farmer, our agronomist and apiculture expert and I actively participate. The research is being designed to manage three treatments: a faba-bean plot with honeybees, a plot without any bees (excluding pollination of the flowers) and a plot with normal condition. The research focuses on assessing the contribution of honeybee pollinators to faba-bean crop yield increment.



I believe the final results of this participatory research will be vital to influence the behavior of farmers, development practitioners and policymakers through evidence-based farmer-led research, whereby short- and long-term measures will be taken to conserve the bees’ kingdom.”

4. The serpentine ditch, a local innovation that leads to livelihood transformation

It was greatly inspiring to talk with the CLIC–SR farmer, Abadi Redahegn, who has efficiently managed excessive waterlogging that stems from heavy groundwater on his plot of cropland through constructing serpentine type of underground canals so that crops, pastures, vegetables, fruits, etc have the best possible moisture conditions.

For most farmers and for many of us with agricultural training, to drain is to remove the very noticeable excessive water that is lying in farm fields and affects any agricultural activities. We mostly know the common practices of removing excess surface water, such as grassed waterways, surface drains (waterways without grass), surface culverts and open ditches.

But, this is not always the case. I have practically come to know from my field visit that there is also water lying below the surface that needs to be drained as otherwise crop production and agricultural practices will be seriously affected. Not only for small-scale primarily subsistence farmers but also for mechanized modern farmers, groundwater management is very challenging and can be extremely expensive.

In this regard, Abadi has done very great things! I realized that he had no academic training in draining excess groundwater but he followed a steep learning curve through applying his own wisdom and innovation to practically managing excess groundwater and surface water, which has made him a highly productive farmer. I held an in-depth discussion with Abadi and I probed about his great achievement in drainage practices, which can really indicate the most insightful analysis about farmers’ local innovation. Thus, I was able to garner the success story of Abadi, which I summarize below.

“The serpentine ditch, my precious local innovation, has shortly led me to livelihood transformation, my favorite slogan”, Mr Abadi said.



Mr. Abadi Redahegn, 45 years of age, a resident of Mai Berazio sub-village, Tahtay Machew District, and one of the active CLIC–SR farmer innovators

“My life has undergone a number of challenges from long years as a guerilla fighter for democracy and peace to a spearheading farmer for survival struggle against excess groundwater on my small plot of land, on which my income depends.

Immediately after the demise of the Derg Regime in 1991, I turned to my regular rainfed agricultural practices, which have been the main income source to my household, though rainfed farming is always full of risks. Particularly, my plot of land was suffering from extreme waterlogging, which completely did not allow any agronomic practices except favoring reproduction of vector-borne diseases. As a result, I was scared by the food crisis as if I had considered my life as a hopeless, unpleasant reality. I witnessed it was a challenge for me to drain the huge water staying in my farm plot both on and below the surface, but it was also my responsibility to solve this challenge so as to maintain livelihoods for my existence.

At this low point in my life, looking for a direction, I began to struggle against such excess waterlogging – both ground and surface water, which were in a close alliance in the time. I was puzzling day and night where to begin to chart my assignment.

Principally, I assessed the origin and the sources of such huge water and realized that it is the upper rocky catchment around my village, which drains excess water to the downstream land through porous soil particles. So far, I had planned to curb the matter from the sources, but this was unimaginable for a small-scale farmer like myself. *(This clearly demonstrates how the community has a good knowledge of the location of water and its characteristics in their surroundings – reporter’s own notes).*

Based on my traditional limited knowledge of drainage depth and spacing in specific soil types, I preferred to design the scheme on my plot and began constructing three underground serpentine ditches across my plot, which immediately allowed water to leave my plot. Accordingly, I was able to grow crops for the first time on the plot that had been wasteland due to the extreme waterlogging.



In the meantime, I learnt two important hands-on lessons. Firstly, the excess water was not sufficiently drained on account of wide space between the three serpentine ditches, which resulted in low crop yields though promising. Secondly, I discovered that the water I drained was not managed and the community downstream was disturbed. Accordingly, I constructed four additional underground ditches, which I assumed to drain efficiently. Moreover, I built three ponds to harvest water drained through the ditches, which reduced the downstream issues. I finally linked all the underground serpentine ditches, ponds and the nearby small seasonal river through drainage water networks and then matters caused by excessive water including downstream conflicts completely came to an end.

Right after this, my innovation allowed me to secure water that is more reliable and allows for a wider and more diversified choice of cropping patterns as well as the production of higher-value crops. Moreover, my income has dramatically increased while yields have increased by far compared with those achieved under the former waterlogging conditions. I am completely blessed: whether dry spell or not, without rain, I always count with a year-round reliable supply of plenty of water from the ponds, and have irrigated fields flourishing with cereals, vegetables and fruits, on what was formerly a useless waste plot of land.

The serpentine ditch, my precious local innovation, has shortly led me to livelihood transformation, my favorite slogan,” said Mr Abadi. “Other than livelihood transformation, my resounding success has further brought a small window through which agricultural offices, universities, NGOs, scientific researchers and graduate students have recurrently visited and conducted their studies as well as begun to appreciate my local innovative capacities. Similarly, farmers from various areas have paid visit to my serpentine ditches quite frequently to solve their problems of waterlogging in a similar way.

As a result, I have received a number of awards and appreciation from various institutions and government organizations including Tahtay Machew District ARDO, Axum and Mekele Universities, Axum Agricultural Research Center, BPA etc as well as a number of individuals.

In fact, being a PROLINNOVA CLIC–SR farmer, I have a number of occasions where I have demonstrated how rewarding my local innovation is. The day-to-day support rendered from Dr Hailu Araya, Axum area CLIC–SR Platform and the opportunity created by CLIC–SR through BPA are very great and what I am mostly proud of is that it brought together local and international visitors including researchers, practitioners, farmers, private groups, policy analysts, government bodies and students to learn from my local demonstration which now establishes a strong interaction between farmers and researchers so as to transform rural society sustainably.

Moreover, as a CLIC–SR farmer, I had the opportunity to participate an exposure visit organized in Nairobi, Kenya (*note: to the Eastern Africa Farmer Innovation Fair*) last year which provided me with an excellent opportunity for hands-on experience sharing and I also noticed the very strong interaction between local farmers and scientific researchers as well as a wide range of other partners.

Finally, I thank BPA, CLIC–SR and the Axum Platform for inspiring local farmers and researchers to share their knowledge, to create new understandings and to work together toward change. I believe, with this synergy and mutual efforts, we will make our ends meet.”

5. Joint experimentation that has encouraged rural women to strive towards their future

Ms Brha Tadesse GebreEzgie, 41 years of age, resides in Mai Siye sub-village in Tahtay Machew District. She is one of the active CLIC–SR women farmers. She attended a number of events facilitated by CLIC–SR and also demonstrated her local-level discoveries to various groups. During my household in-depth interview, she shared with me her experiences confidently, which I directly present as follows.

“Looking for new ideas through local farm trials has therefore become my passion gradually and thus I continue to struggle towards my destiny, champion in mind!” Ms Brha said.

“Dr Hailu Araya has truly supported us rural women farmers in particular to participate actively through enhancing our capacity for informed decision-making on issues that matter for our survival. I am fortunate to be one of the CLIC–SR farmers, as it can continuously keep my commitment up and has made me feel good about myself and focused on my future priorities and desires.

Certainly, the great opportunities facilitated by the CLIC–SR project and BPA have enabled me to speak to many audiences and also demonstrate my local innovation as well as experiences in preserving tomatoes from spoilage to wider communities – from my villagers to participants in the PROLINNOVA International Fair in Nairobi, Kenya, which remains in my heart forever. As a CLIC–SR key woman actor, I have practically realized a high tendency that women farmers are highly valued and needed to transform the rural life fundamentally. I have widely announced the news that the time for women is now, so seize the most of it.

To this extent, I know where to focus my efforts and attention. So far, more than two years have elapsed since I started joint farm-level trials with Tahtay Machew District ARDO extension workers and AARC experts on a new sorghum variety (Melkasa 6), which I bought from ARDO.

The improved sorghum variety (Melkasa 6) trials in my farm plot have not been very complicated, just under our normal agronomic practices. The trials are simple and conducted in three plots, where the new variety is grown with the local variety (intercropping) in the first plot and separately in the second plots, which all are compared to the third plot (local check). I along with our District agricultural experts review the progress of my local experiments. In this particular trial and other innovative issues, I seriously ensure the active involvement of my children, my daughter in particular so that she will be a champion of change in the future. As a rural woman, my sorghum variety preferences and criteria have many dimensions. The new variety has to meet all our criteria, including achieving higher grain yield under various stresses (stalk borer, moisture deficiency etc), fodder preferred by animals and firewood, all of which I observe.

Looking for new ideas through local farm trials has therefore become my passion gradually



... I seriously ensure the active involvement of my children, my daughter in particular so that she will be a champion of change in the future ...



In the course of the trials, I have identified some important results that indicate that the new variety has thrived under normal management. Now, the last trial is in different seasons and I will decide on the overall effectiveness of the variety. I have made the trial three times rigorously to be sure that benefits from the new variety will be tangible and very sustainably, because there are times I come across varieties being today best and tomorrow waste.

If the new variety is successful, evidenced by all the diverse comments including other farmers' views, I hope this will be a decisive turning point for lifting my small earnings through becoming a high-yielding sorghum seed supplier. It is widely known that our local variety of sorghum is gradually facing production challenges, though sorghum is one of the staple crops in our community.”

6. Way forward for future action

I have learnt the great value of farmers' knowledge and experience during my field visit to the Axum area. This valuable experience will inform our future practitioner efforts and has made us more aware of the potential role which CLIC–SR can play to provide the opportunity for an intensive and sustained interaction between farmers and scientific researchers.

Finally, I suggest the following follow-up action:

- As I observed a great number of national and international tourists around the Axum area, I therefore encourage BPA and the Axum Platform to further underpin ecotourism interfaces which will center around our CLIC–SR partners;
- The interaction between farmers and researchers at Enebse Sar Midir District (the CLIC–SR site located in Amhara Region) must be strengthened through follow-up action and experience-sharing visits between the CLIC–SR partners in the two sites.

