

Report of the Humidtropics western Ethiopia research for development platform first field visit in Jeldu Wereda and second meeting in Ambo University 12–13 October 2015

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Top: Research for development platform meeting participants; Bottom: participants of the field visit

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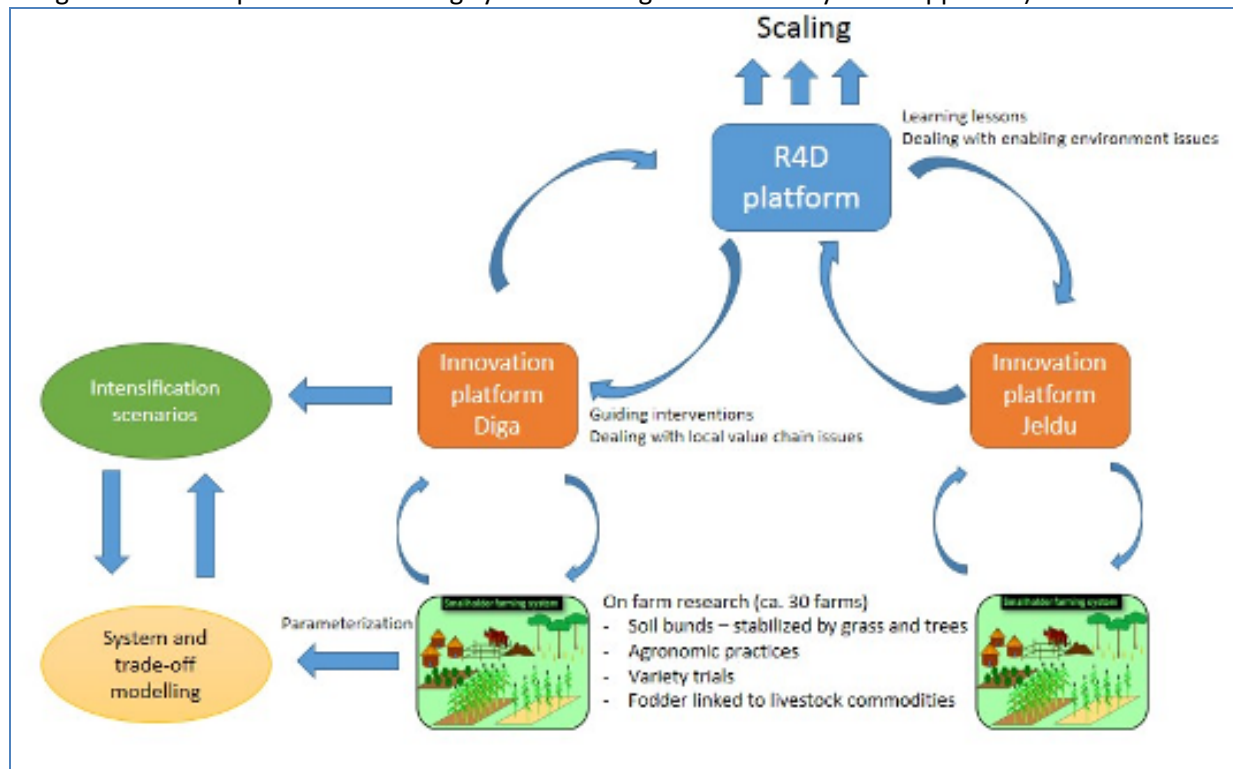
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Introduction

Humidtropics western Ethiopia Action Site R4D platform is a multi-stakeholder platform established to enhance interactive learning and innovations in humid tropical areas of western Ethiopia. This platform is a national level platform which is established early February 2015 to support the innovation platforms operating at two field sites in terms of addressing higher level technical, policy, scaling up and institutional issues.

Figure 1: Western Ethiopia Cluster 4 project (Improved Natural Resources Management based integrated tree-crop-livestock farming systems through innovation systems approach).



The platform, after its launching and first meeting in February 2015, has now conducted its second meeting at Ambo University. The meeting was arranged for two days where the first day was devoted to visiting ongoing integrated activities at Jeldu field site. This has created a good opportunity for R4D platform members to have good insights of what is actually going on at field sites. The platform meeting was then conducted on the second day (13th of October, 2015) at Ambo University main campus. The overall objectives of this meeting were:

- To see the Improved Natural Resources Management based integrated tree-crop-livestock action research activities accomplished on farmers' fields through innovation platform approach
- To discuss and put way forward to enhance multi-stakeholders engagement in integrating their work to the existing system and scaling up efforts by government and NGO programs

First Day – R4D platform members field visit to Jeldu

Date: 12th October 2015

Site: Jeldu Wereda Kolu Gelan Kebele (Melka Watershed)

The field visit was organized to enable R4D platform members to have exposure to what is actually going on at field sites. Most of the participants are from Addis and morning travel was started from Addis to Jeldu which is around 100 KM west of Addis Ababa. All participants first met at Jeldu town (*Gojo*) around lunch time and the visit was started after lunch. Five participating farmers activities on their farm were visited one after the other that show case the general interventions undertaken by cluster 4 project for 2015. The following five farmers' field and their activities were visited by R4D platform members.

Visit to Girma Ararsa's farm

Before starting the field visit, Zelalem Lema (ILRI)-facilitator, made briefing on the objectives of the field visit. In his briefings, he mentioned that the field visit was specially arranged so that the R4D platform members get the feel of the actions on the ground before their meeting the next day. Teklu Erkossa (IWMI), who is the principal investigator working on the Natural Resources Management (NRM) and crop productivity at the field site explained that 20 farmers are involved in the evaluation of the soil and water conservation and agronomic practices on their plots. He further explained that 10 of the farmers have built soil bund in their plots and stabilized with desho grass since last year when they have grown wheat while the rest have implemented the agronomic practices. Farmer Girma Ararsa, is one of the 10 farmers who has used both the soil and water conservation measures and agronomic practices. This year they are growing faba bean on their rejuvenating soils, and potato a staple food in the areas is planned to follow next year. Among the contrasting agronomic practices that all the 20 farmers are testing are broadcasting and row planting methods. After informing the visitors that Girma is one of those involved in integrated NRM and tree-crop-livestock productivity, he suggested that they give attention to how the soil bund is fully stabilized by the desho grass, the moist soil conditions due to the use of soil bund and its impact on the crop performance and the contrasting crop stand due to the planting methods.

While hosting the visitors on his plot, Girma expressed his happiness with the work. He mentioned that such an integrated work is not a common practice in the area. The soil bunds integrated with desho grass has helped him to conserve soil and water while the row planting has made it easier for him to perform weeding and other field operation.

Figure 2: R4D platform members visiting Girma's on farm research activities



Visit to Abera Berhanu's farm

Two livestock related activities; livestock feed (Alfalfa) and cattle feed trough were visited here. The visit was started by Brehane Mekete's (Ambo University) brief introduction about the livestock feeds and cattle feed trough work going on in the area. In his briefing, Brehane mentioned that:

- The cattle feed troughs under introduction is to improve feed utilization efficiency and reduce wastage of feeds
- Two types of feed troughs are being introduced to farmers; two side and one side
- In the case of two side troughs, two animals feed on one side and the rest two feed on the other side where as in the case of the one side all the four animals feed on the same side.
- The cattle trough is so far, constructed only for four farmers and additional six will be constructed soon
- Farmers are made to grow desho grass and Alfalfa
- Alfalfa is grown both for feed and for seed production, where the seed is mainly for sale
- Alfalfa is to be used in combination with feeds since it has high nutritive value (21% CP)
- A total of five farmers have planted Alfalfa
- The Five participating farmers were selected based on their access to irrigation and ownership of beehives
- Training was given to five alfalfa growing farmers
- Alfalfa require repeated weeding and cultivation (3-4 times) and thinning
- Damage by wild animals such as Rabbit and Miniature deer are wild animals threatening alfalfa production in the area

Following Brehane's explanation, farmer Abera on his part has mentioned that he is happy with the integrated farm activities he is undertaking. He also mentioned that he wants to reduce livestock number and keep few productive animals with improved management. Finally, the following questions and comments were raised by the participants

Questions

- Have you seen any change in milk as a result of feeding desho grass?
- Response: Yes (farmer Abera)
- Is there water for irrigating alfalfa during dry season?
- Response: Yes, the selected farmers are those who have access to irrigation (Brehane)

Comments

- There is a need for advising farmers with regard to roof water harvesting
- There is a need to have shade for feed trough for avoiding spoilage of feeds by heat and rain

Figure 3: Members visiting Abera's farm activity



Visit to Bekele Fufa's back yard desho grass field

As explained by Tibebu (Jeldu Livestock Agency head), farmer Bekele feed his dairy cattle in town using this desho grass using cut and carry system. The grass was initially planted on the degraded land. It has multiple benefits; for feed, for rehabilitating degraded land and for sale. In his response to the question raised by participants regarding sale of desho grass, Tibebu said Desho was sold for a total of ETB 1.5 million within last year only in this Wereda. Farmers' individual sale ranges from ETB 2000-8000. Six cooperatives are formed on production and sale of desho grass in the Wereda. Farmer Bekele has planted the grass four years ago. The grass is so productive that it can be harvested 3-4 times in a year.

Visit to the two brothers Mulisa Ajama Abera Ajama's farms

These two farmers are the other participants of integrated research for development activities on their farm. Mulisa has almost everything; grow livestock feeds (desho grass and Alfalfa), planted faba bean using improved seed and raw planting method and also constructed feed trough and improved the utilization of the available feed resources. He is so glad to have access to the knowledge he received through this training that enabled him to improve his crop and livestock farming system. His brother Abera, on the other hand, is a strong farmer doing cattle fattening by mixing desho grass, hay, "Atela" (local drink by product), straw and salt. Last year he bought two emaciated oxen at a price of ETB 4000 each and sold at ETB 8000 each after two month fattening. With the ETB 16,000 and some money added he used it as a capital and bought another four emaciated oxen for a price that ranges from ETB 4000 –

6000 and now after two months of fattening the market for one of his oxen reached ETB 12,000. He is also participating in growing faba bean and desho grass in his farm land. Aberra mentioned that he used to have more than 20 cattle and he used to travel long distance with his cattle for about two months in search of feed during dry season. Now he said in addition to producing good bio-mass of desho grass for feed he is also started generating income by selling the seedlings of desho to other farmers and government projects since last year.

Figure 4: Abera with his fattening oxen and improve livestock feed trough.



Final closing remark of the field visit by head of the agricultural development office

The field visit was finally closed by Hailu, head of the agricultural development office of Jeldu Wereda. In his closing remark, Hailu expressed his appreciation of the nice work done by the core-partners and all members of the innovation platform. He mentioned that such an integrated work is really what the Wereda has to promote in the future. As usual, the Wereda has a plan to organize a big field day on this specific site of Humidtropics intervention to create wider awareness on the matter among other hundreds of farmers in the Wereda to scale out the important lessons learnt from this intervention. The objective of the big farmers field day, he said, is to create farmers to farmers linkage for wider adoption of soil and water conservation activities integrated with improved feed and multi-purpose trees, access to the improved seed for faba bean, raw planting for minimizing the seed and fertilizer application as well as to increase productivity and improved utilization of desho grasses for livestock including the improved livestock feed technology introduced for fattening and in the future for dairy. He expressed his wish that if most of our farmers adopt this integrated works they will increase their income and improve their nutrition.

Figure 5: Hailu, Jeldu wereda administration office vice head, giving his closing remarks at the end of the field visit.



Humidtropics western Ethiopia Action Site R4D 2nd platform meeting

Venue: Ambo University, Senate meeting room

Date: 13th Oct 2015

Time started: 9:10 am and completed at 3:00 pm

Facilitated by: Zelalem Lema (ILRI)

Photo by: Desalegn Tadesse (IWMI)

Minutes recorded by: Taha Mume (OARI)

Presentations by: Tekilu Erkossa (IWMI), Zelalem Lema and Melkamu Derseh (ILRI), Hadia Seid (ICRAF), Taha Mume (OARI), Tamene Temesgen (Legume CHOICE – ILRI), Endrias Zewdu (AU)

Purpose of the meeting:

- Research for Development Platform 2nd meeting at Ambo University. After field visit on the first day, members of the platform have a chance for more insight about the cluster 4 project activities accomplished, challenges faced and the way forward to evaluate research works done at both field sites through learning and sharing of integrated system research approaches for sustainable intensification through multi-stakeholder processes.

Expected outputs:

- Documentation of video and photos from the field visit
- Platform members agreed on the way forward mainly sharing of roles and responsibilities to address market issues and scaling up of best practices
- Produced R4D platform meeting report, news and blog post to be shared with all members online

Agenda of the meeting:

- Welcome, self-Introduction and brief introduction to the Agenda
- Opening remarks by Endrias Zewdu (Chairman of the platform)
- Brief introduction of Innovation platform approach and Humidtropics program cluster 4 projects activities accomplished in both field sites by the following core partners:
 - ILRI-innovation platform approach as effective and inclusive mechanism by Zelalem Lema
 - IWMI-soil and water conservation related activities by Teklu Erkossa
 - ILRI Livestock feed and market related activities by Melkamu Deressa
 - ICRAF activities accomplished on testing of multipurpose trees by Hadia Seid
 - Legume CHOICE project activities by Tamene Temesgen
 - Ambo University – research and community service activities related to agriculture and Humidtropics activities
 - General discussions on scaling up and market issues and the way forward

Figure 6: Platform meeting.



Welcome and introduction

The meeting was started by introduction of meeting agendas by the facilitator Zelalem Lema. This was followed by speed networking which is unique one used to facilitate self-introduction where participants were made to come together to the front and chat with each other.

Figure 7: Speed networking used for self-introduction among the R4D platform members.



A warm welcoming and opening remark was made by Endrias Zewdu, chairman of humidtropics western Ethiopia action site R4D platform and director of research, consultancy and community service directorate of Ambo University. In his opening speech Endrias pointed out that:

- Our planet is currently challenged with many natural and anthropogenic originated problems claiming the lives of millions of humans, plants and animals as well as reduced productivity performance.
- Challenges of current generation such as low productivity and sustainable development could be alleviated through coordinated, collaborative, coherent, cross-sectoral and multi-disciplinary research initiatives.
- Ethiopia needs an excellent research to tackle issues of climate change, food security, energy, health etc. to be competitive in the global market.
- A holistic research approach of Humidtropics project in Jeldu and Diga which integrates crop productivity, livestock feeds and NRM is of immense importance in improving the livelihood of resource poor farmers.

- Multi-dimensional and complex problems of our farmers can only be solved through integrated research involving university academicians, researchers from national and international organizations and the community at large.
- Ambo University gladly opens its door to jointly work with different partners including Humidtropics cluster 4 project core partners (ILRI, IWMI, CIP, ICRAF) and the national research partner OARI (IQQO).
- Ambo University, through its research and community service endeavors, is committed to contribute its parts in changing the livelihood of farmers of western and south western Shewa in general and Jeldu district in particular.

Finally, Endrias expressed his heartfelt gratitude for R4D platform members, as a chairman, different government and non-government organizations and community members who directly and indirectly contributed towards the achievement of the research activities of Humidtropics project and declared that the meeting is officially opened.

Following the welcoming and opening remarks, there were different presentations on the general issues about Humidtropics research program and an integrated research for development approach and specific issues related to research activities in the two field sites; Jeldu and Diga. Accordingly the first two presentations by Teklu and Zelalem have focused on an overview of Humidtropics research program and Integrated System Research and R4D Platform approach.

Teklu, in his presentation on an overview of Humidtropics research program pointed out that:

- Hunger and Poverty, malnutrition and disease, environmental degradation and climate change are the current global development challenges
- The vast Humidtropics region, although it has high potential in terms of agro-ecological resources such as water, soils, flora, fauna, etc. is still facing similar challenges
- Low productivity, land degradation, deforestation and pests and diseases and post-harvest losses are the common problems
- Humidtropics give attention to four key elements (4Ps); the people, production system, partnership and policies.
- System analysis and synthesis, integrated system improvement and scaling and institutional innovations are the three strategic themes of the Humidtropics program
- In terms of the approach Humidtropics focuses on entire system within which agriculture is practiced putting the people at centre, builds on system thinking and analysis, sustainable intensification and multi- disciplinary, multi-institutional and multi-sectoral linkages.
- The program operates in four action areas; West Africa Humid Lowlands, East and Central Africa Highlands, Central America and Caribbean, and the Central Mekong
- The East and Central Africa Highlands action area to which Ethiopia belongs constitute six countries namely; Ethiopia, Rwanda, Burundi, Kenya, Uganda and Democratic Republic of Congo

IPs as effective and inclusive mechanism for agricultural transformation by

Zelalem Lema

Zelalem presented innovation concepts and its applications in the Humidtropics field sites in Ethiopia. His presentation is summarized as follows:

- African agricultural research has not realized its potential contribution towards improving the livelihoods of Africans, especially the smallholder farmers due to low use of an integrated and participatory research approach
- An integrated research for development approach enables an iterative learning to occur among research, the rural communities, policy makers, development agents, market and value chain actors

What is innovation?

- **Innovation** is defined as a ‘process of producing, accessing, diffusing, and most importantly, putting in to use knowledge in socio-economically useful way’
- It can be technological, organizational, institutional, managerial, and related to service delivery or policy
- It is knowledge or technology – doesn’t become an innovation unless it is used

An innovation system is the cluster of individuals and organizations involved in knowledge generation, diffusion, and use (researcher, private sector firms, universities, extension agents, technical experts from line ministries) – together with the processes required to turn knowledge in to useful socio-economic benefits.

Innovation system in agriculture – system intensification – is very important as agricultural problems are becoming more and more complex – engaging different actors in the research processes are very important.

Innovation platform or **Research for Development (R4D) platform** is a space for learning and change. It is a group of individuals (who often represent organizations) with different backgrounds and come together for common goals. Their interaction leads to participatory diagnosis of problems; joint exploration of opportunities and investigation of solutions leading to the generation of agricultural innovation along the targeted commodity chain or system of interest.

R4D platform is established as a national level for strategic guidance of the local IPs and also for policy and scaling up issues. Local IPs have been established in Diga and Jeldu since 2011 (NBDC Project) by ILRI and both IPs are imbedded in Humidtropics activities since 2014. The composition of the R4D platform members represent donors, NGOs, research institutes, government ministry of agriculture representatives from regional and national level, agricultural universities, farmers association, the two field sites Wereda administrators and media (Oromia TV and Radio).

Zelalem, in his brief introduction about Integrated System Research and R4D Platform approach mentioned the mandate and tasks of this platform which include:

- Ensure the coordination of the research activities implemented through IPs at field sites
- Facilitate stakeholder involvement (including investment)
- Assist in mobilizing additional resources for Humidtropics
- Assist in alignment of Humidtropics programs to national priorities
- Facilitate scaling up and out of successful innovations
- Facilitate partnerships and networking amongst stakeholders
- Comment on and provide East and Central Africa (ECA) Flagship Coordinator with feedback on ECA's annual work program
- Comment on and provide feedback on the effectiveness of ECA's program of work
- Alert ECA to key national issues of that are related to Humidtropics
- Set up objectives to be achieved by the platform during its mandate

In addition to these, Zelalem also highlighted ongoing integrated research activities in Jeldu and Diga field sites and their outcomes. The following points were raised during his presentation that lay out the challenges as well the main role of innovation platforms to deal with the challenges.

The main challenges facing the farming communities in Jeldu and Diga is identified during the diagnosis phase during NBDC project and these challenges include:

- Sevier soil erosion and land degradation (NRM issue) – Nile basin
- Low productivity
- Collaboration issue (institutional issue)
- Top down approach – less inclusive

Humidtropics continue to work in these two Weredas with existing and functioning IPs to capitalize on NBDC feed intervention achievements

- These IPs have technical group members – university, research centre, Wereda line departments and NGOs to support implementation on the ground
- Membership include men and women farmers, local government line departments, researchers, NGOs, University (research and community service), students
- Type is not commodity based. It is an IP that deals the whole system (tree-crop-livestock)
- A year (January – December) snapshot research activities of Humidtropics in Western Ethiopia (step by step) is done

Regular IP meetings and activities are divided in to three seasons each year

- January – April - IP- planning meeting and R4D platform planning meeting
- May –August - IP, planting, training and follow-up meeting
- September – December - Farmers field day and evaluation meeting and R4D platform field visit and evaluation meeting

The main activities accomplished by innovation platform in both sites during each of the three season is discussed by Zelalem as follows:

Innovation platform planning meetings and activities (January to April)

- Facilitate sharing of last year achievements and challenges
- Lessons learnt from last year and incorporating in the planning
- Men and women farmers are empowered to take the lead on planning (decide on which crop for rotation, time plan, proffered feeds etc.)
- All partners contribute their inputs and own the plan
- Role of farmers, research centre, university, government, local NGO and CGIAR centres shared
- Detail plan will be developed for each research theme

How are dialogues facilitated during the regular IP meetings?

The following principles are used for effective facilitation for creating an environment that best suits for learning and sharing

- All ideas are treated equally (women and men farmers, local experts, development agents, scientist, local decision makers)
- Local language (all members are encouraged to talk in any language they are comfortable with including local language)
- Photo based power point presentation with few texts mainly for farmers to understand well
- Flip chart (for sketching and taking notes and group presentations on plenary)
- Research theme based group discussion based on expertise and interest
- Plenary discussion for joint decision on each plan
- Energizer, tea-coffee and lunch together for creating more team sprits
- For example the following activities were planned during the planning meetings by innovation platforms in both sites (Tables 1 and 2).

Table 1: Jeldu Wereda participating farmers in 2014 and 2015

Wheat based mixed farming system	Barley based mixed farming system
<ul style="list-style-type: none"> • 20 farmers participated • IWMI led activities planted wheat in 2014 and faba bean in 2015 • Improved seed, improved management practices, capacity building • Soil bund integrated with improved feed and multi-purpose trees • Feed utilization linked with market (diary processing) 	<ul style="list-style-type: none"> • 20 farmers (households) • IWMI led activities planted wheat in 2014 on 20 farmers plots and Legume CHOICE project take over the activities and planted faba bean in 2015 on 30 farmers plots • Improved seed, improved management practices, capacity building • Soil bund integrated with improved feed and multi-purpose trees • Feed utilization linked with market (diary processing)

Table 2: Diga Wereda direct participating farmers in 2014 and 2015

<i>Teff</i> based mixed farming system	<i>Teff</i> based mixed farming system	Grazing land management integrated with SWC
<ul style="list-style-type: none"> • 30 farmers participated • Planted Maize (2014) and Groundnut (2015) • Improved seed, improved management practices, capacity building • Soil bund integrated with improved feed and multi-purpose trees • Feed utilization linked with market (diary processing) 	<ul style="list-style-type: none"> • 20 farmers (households) • Planted <i>Teff</i> (2014) and Faba bean (2015) and Potato (2016) • Improved seed, improved management practices, capacity building • Soil bund integrated with improved feed and multi-purpose trees • Re-introduction of Potato (2015 seed multiplication and DLS construction) 	<ul style="list-style-type: none"> • 40 farmers are participating in improving their free grazing land – Rhodes, Chomo, desho and Elephant grasses for feed and seed • Silage making • Improved feeding trough and hay storage facilities

Innovation platform follow up meetings and activities (May-August)

Before the IP follow up meeting the following will be done jointly

- Mobilizing resources and input from IP members as per the role identified
- Provide practical trainings for farmers on planting (land preparation, raw planting of crops, weeding, soil)
- Organize follow up meeting (checking if the implementation is according to the joint plan developed)

Innovation platform evaluation meetings and farmers field days (September – December)

- Every year during this season all IP members will go to farmers field during farmers field day to visit the progress of each research activities accomplished on farmers field during the first day and hold their regular innovation platform meeting on the next day
- The IPs are expected to evaluate activities accomplished in the year and take lessons for next year planning through sharing of roles and responsibilities
- New farmers are also invited to the farmers field day to promote learning and scaling up through creating farmers to farmers linkage
- Media is also invited for wider sharing of the activities accomplished through the innovation platform approaches (mainly Oromia Radio and TV)

General outcomes of the innovation platform activities

- Managed to bring effective joint work among the core CGIAR partners (IWMI, CIP, ILRI and ICRAF) and national partner (OARI) to integrate their specialization expertise on the same farmers field
- Resource utilization is efficient – shared roles among farmers, local partners and core partners – input supplies (improved seed, transport, technical, community mobilization, empowering farmers)

- Hundreds of farmers increased their crop and livestock productivity while maintaining their soil (selling of seed and seedling from feed for government projects like AGP and SLM) : this year Jeldu farmers sold desho grass seedling for ETB 1.5 million
- Six MSc students have been supported to do their research in the field sites (IWMI employed staff for 4 months to work in the field to collect soil sample and other agronomic and economic data)

At the end of the above two introductory presentations, there was a question and answer session. To this end, the following issues were raised:

Representative of Oromia bureau of agriculture Aklilu Bogale mentioned the need to arrange field visit for higher officials to see and learn from the humitropics field experience. Adding Aklilu also mentioned the need to integrate Desmodium as additional animal feed and the need to consider additional stakeholders such as Digital Green (NGO) and Media as member of the platform.

Figure 8: Innovation platform meetings



Presentations on the status of ongoing on-farm cluster 4 research activities in Jeldu and Diga field sites

The CGIAR core partners (ILRI, IWMI and ICRAF) and the national partner OARI (IQQO) presented the status of their ongoing research activities on the following titles. Their presentations are summarized as follows:

Integrated crop and soil and water conservation activities at Jeldu and Diga-by Teklu (IWMI)

He started by introducing the International Water Management (IWMI), which has its office in Addis Ababa to work for East Africa and Nile Basin. He explained that IWMI has been contributing to the Humidtropics program mainly in western Ethiopia action site. The major part of field research including on-farm testing innovations related to soil and water conservation and agronomy, investigation of social and economic impacts of the innovations at the two field sites, Diga and Jeldu are done since 2014. At both sites, two major farming systems have been considered for the study; the maize based lowlands and *teff* based midlands at Diga and the wheat based midland and the barley based systems in the highlands at Jeldu. At both locations, in collaboration with various stakeholders, attempt was made to integrate the technical and agronomic components, to address the major challenges of the farming systems and to identify the factors responsible for adoption and scaling up of the innovations.

After reviewing the progress of these on-going activities late in 2014 in view of the overall objectives of the Humidtropics and that of the ECA flagship project, initially at site level with stakeholders through the Innovation Platform (IP) which was followed by internal discussions, and in view of ensuring continuity the work began despite the budget shortfalls. It was agreed the *teff* based activity in the middle lands of Diga, in which innovations related to NRM (soil and water conservation) and agronomic practices are being tested be transferred to OARI and District Office of Agriculture while IWMI will continue to provide technical backstopping without allocating fund. In the lowlands of Diga, with two field trials one on the maize based farming system and another one on improving degraded grazing land, IWMI continued to lead the investigations but enhanced linkage with other CG centres. In 2015, the same trial continued with greater integration between the crop and livestock based interventions in which IWMI looks into the NRM and productivity aspects while ILRI and CIP will look into the post-harvest related constraints of livestock fodder.

Similarly, the activities in the highlands of Jeldu dealing with soil and water conservation and crop management effect on productivity of the barley based system has been transferred to the legume choice project of ILRI. In the middle part of the landscape at Jeldu where soil erosion is a major limiting factor, NRM innovation including soil bund and agronomic practices are being tested. In 2014 ten of the twenty farmers involved in the trials had soil bund re-enforced with desho grass in their field allocated for evaluation of the innovations while the other ten followed their traditional land management, but both group nested row planting and the traditional broadcasting methods as subplot treatments. In 2015, the soil and water conservation treatments was maintained with some improvements while the crop was changed from wheat to faba bean. The feasibility of the innovations under the prevailing socio-economic circumstances and the factors limiting adoption of the innovations are being investigated in

detail. As in the case with Diga, here also, ILRI and CIP are dealing with the post-harvest handling of the fodder (crop residue and grass growing on the soil bunds) including storage and utilization options in order to augment the benefit from ‘increased’ biomass due to the innovations.

Legume CHOICE project overview and its interventions linked with Humidtropics activities at Jeldu-By Tamene Temesgen (Legume CHOICE)

Based on base line survey conducted, lack of access to improved legume seeds, soil fertility degradation, and lack of knowledge and skill on legume production were the major problems identified up on discussion with farmers in Jeldu and Diga Weredas. To solve the issue of legume seed shortage, the project has started cluster seed production using group of 60 farmers (30 each on haricot bean and soybean improved seed) in lowland kebele, Lalisa-Dimtu in Diga Wereda and a group of 20 farmers were participated on highland legume (10 each on faba bean and field pea) cluster seed production in Fromsa kebele in Diga Wereda field site. Moreover, perennial forage legumes including pigeon pea, leuceana, and lablab seeds were distributed for about 143 farmers in Lalisa-Dimtu and Fromsa kebeles, and were planted in hedgerows around homestead.

A total of 30 farmers in *Chilanko* kebele and another 30 farmers in *Kolu-Gelan* kebele of Jeldu Wereda were participated on this cluster highland legumes (faba bean and field pea) seed production. Half of the participant farmers in *Kolu-Galan* kebele were from those participated on barley based farming system of Humidtropics project led by IWMI on last year. For this activity 21 quintals of field pea and faba bean seeds have been distributed for participant farmers. For this activity 17.5 quintals of haricot bean, soybean, field pea and faba bean seeds have been distributed for participant farmers. Adequate trainings on legume production and management (land preparation, planting methods, weeding and harvesting) were given two times, before planting and on field after planting, for participant farmers. (Table 2)

Table 3: Summary of the intervention activities, number of participant farmers, and area of farmland covered

Field site	Implementation site		Improved crop varieties given	Intervention package	No. of participating farmers	Area planted
Diga	Lalisa-Dimtu		Haricot bean (Nassir)	Improved seed, training, bio-fertilizer	30	0.25 ha each
			Soya bean (Dhidhessa)	Improved seed, training, bio-fertilizer	30	0.25 ha each
			Pigeon pea	Seeds and training	67	Hedgerow
			Leuceana	Seeds and training	45	Hedgerow
			Lablab	Seeds and training	26	Hedgerow

Field site	Implementation site	Improved crop varieties given	Intervention package	No. of participating farmers	Area planted
	Fromsa	Faba bean (Dosha)	Improved seed, training, bio-fertilizer	10	0.25 ha each
		Field pea (Burkitu & Billalo)	Improved seed, training, bio-fertilizer	10	0.25 ha each
		Pigeon pea, Leuceana, Lablab	Seeds and training	5	Hedgerow
Total				223	20 hectares
Jeldu	Kolu-Galan	Faba bean (Gebelcho)	Improved seed, training, bio-fertilizer	15	0.25 ha each
		Field pea (Burkitu & Billalo)	Improved seed, training, bio-fertilizer	15	0.25 ha each
	Chillanko	Faba bean (Gebelcho)	Improved seed, training, bio-fertilizer	15	0.25 ha each
		Field pea (Burkitu & Billalo)	Improved seed, training, bio-fertilizer	15	0.25 ha each
Total				60	15 hectares

Integrating feed production and utilization options linked with market works being led by Ambo University and ILRI –by Brehane Mekete (Ambo University) and Melkamu Derseh (ILRI)

Livestock production is an integral part of the mixed farming system in the Humidtropics action sites of Ethiopia, serving as a source of food, cash income, farm power, and manure. Improving the productivity of livestock in a sustainable manner is therefore one of the ways to diversify the income and hence the livelihood of the farming community. As feed is the major constraint for livestock production in the action sites (Diga and Jeldu), ILRI has been working towards the adoption of cultivated fodders, and integration of the fodder production activity with ongoing soil and water conservation structures. Grass forages, particularly desho grass in Jeldu and Rhodes and Chomo in Diga have been successfully adopted and being produced in large quantities. Within the Cluster 4 proposal it has been planned to conduct action researches in the area of legume forage production such as Alfalfa, Chomo and desho grasses for soil bund reinforcements, postharvest handling and utilization of cultivated forages and other feed resources as well as creating market links for livestock products, feeds and forage seeds.

Alfalfa forage was introduced to Jeldu action site, after a group of interested farmers received training on how to plant and cultivate the fodder by Ambo University (AU). Alfalfa is perennial legume forage with high protein content (up to 25%) and digestibility (70%). When mixed at a ratio of 1:3 with grass forages like desho, which has about 11% crude protein, it is possible for farmers to formulate a balanced

ration for their dairy or beef cattle, and use the available feed biomass effectively. The alfalfa fodder is currently growing well in the farmers' fields. The seed can generate additional income for farmers, and towards that end there will be a continuous follow up and technical support from AU, ILRI and Wereda experts. Improved cattle feed troughs have been introduced to minimize wastage of feeds such as desho while feeding to the animals. It is believed that the feeding trough will considerably reduce wastage of feed and labor cost of feeding, contributing towards a sustainable cut-and-carry system in the area.

It is also planned to introduce improved feed storage sheds for hay and other crop residues to avoid quality deterioration and loss of feed due to weathering and termite attack. Training on feed conservation practices such as hay and silage will be part of the package of improved postharvest handling and utilization of livestock feeds. Market links for desho grass, Rhodes hay and seed, dairy and other livestock products have been given due attention. Formation of farmer groups and legal entities (cooperatives) and providing technical and material support will be done in due course. Desho grass producer cooperatives have been established in the Jeldu site. Strengthening already existing cooperatives and creating enabling environment for a fair market share will be done jointly by the Wereda sector offices with support from national partners and ILRI.

Testing of multi-purpose trees integrated with soil and water conservation as well as feed on crop and grazing lands-by Hadia Seid (ICRAF)

ICRAF team presented that land degradation, soil erosion and poor soil infiltration, termite infestation and soil acidity as serious problems in the study site. The purpose for ICRAF research activity is to test niches for multipurpose trees among those SWC structures and improve beneficiaries' perception on tree crop integration. Multi-purpose trees integration will contribute a lot to decrease run off velocity and wind speed, OM addition & improve soil physical property. These integrated approach of traditional knowledge with innovative strategies, will strengthen community based natural resource platform at local level.

In both operation site, so far ICRAF achievement includes; orientation meeting with beneficiaries and, demonstrating multipurpose trees seedling planting and handling practices on crop land soil bunds and grazing land infiltration trench. Forty to forty five multipurpose tree seedlings per farmer and 1500 seedlings were planted. This activity is followed up by data collection and awareness raising training and supervision. However, after post-harvest domestic animal interference (free grazing) will be a possible challenge and was captured as discussion point.

Meeting participants suggested that, spacing between seedlings, indigenous tree species selection like *Olea africana* and *Cordia africana*, giving emphasis to test scattered indigenous on farm tree species and try to link ICRAF research with Ambo University, *Chilmo* forest management activity mainly for planting material access. For 2015 cropping season, tree species selection was made based on availability of seedlings and biophysical condition of the planting site. In order to have a representative sample, a 3m planting space was used and it is mainly due to soil bund length and farm plot size.

Finally, the following action points were forwarded; consideration of fodder tree planting, other feed utilization and management options, addressing free grazing related issues. National partners with selected task force will organize a special field visit event for regional and zonal agriculture office higher

officials and relevant stakeholders. Partly, free grazing will also be address during this event. Moreover, ICRAF will provide awareness rising training and technical support on seedling management.

Integrated crop and soil and water conservation activities at Diga and role of OARI in Humidtropics-by Taha Mume (OARI/IQOQO)

OARI as national partner, will facilitate stakeholder engagement in Humidtropics activities, conduct research trials in collaboration with other IP members, facilitate scaling up and out of successful innovations and provide starting materials for OARI released technologies.

Activities performed in situation analysis and cluster 4 project

- Situation analysis survey was conducted between October and January 2014 to characterize dominant integrated systems in the action sites at farm, socio-technical regime (institutional), and landscape levels and to identify entry points for integrated systems improvement at a range of scales and levels focusing on gender, markets, production systems, natural resource management, nutrition, institutions and policy in the action sites
- Participated on 3rd IP meeting
- Participated on western Ethiopia action site cluster 4 project inception workshop held from 18-19 August 2015 in Addis Ababa to address reviewers' comments on the proposal for 2015-16.
- Improved Faba bean variety (Gebelcho) was planted on 10 farmers' fields
- Improved *teff* variety (kuncho) was planted on 20 farmers' fields

Learning and sharing session – constructive discussion through questions and answers, as well as comments

During this session, participants were given chance to give their own reflections and comments and ask any unclear questions on the field visit and presentations. The questions raised and comments given are as follows:

1. How was the women participation in on-farm research activities?
2. Response (Teklu): In most cases, people understand women participation as the involvement of female headed households. But, this project has broken this wrong perception and tried to involve not only widows but also house wives.
3. Why ICRAF didn't raise seedlings in nearby community or government nurseries instead of bringing seedlings from other places?
4. Response (Hadia): I couldn't get seedlings at the nearby community or government nurseries sites
5. Why you didn't provide the required information related to utilization of eucalyptus trees to farmers to reduce its expansion?
6. Response (Teklu): The problem with eucalyptus is not utilization; rather it is unwise plantation of everywhere. The eucalyptus should not be planted on farm land; rather should be planted on marginal and degraded lands.
7. Why you plant Olea Africana as multipurpose trees?
8. Response (Hadia): I planted the indigenous Olea Africana tree
9. Why you use 3m spacing between plants for multipurpose trees?
10. Response (Hadia): The spacing was made narrow considering death of some seedlings
11. Did you collect baseline data (soil data, yield data etc.) against which you compare the changes brought about as a result of intervention?
12. Response (Melkamu): There is a baseline study conducted by Nile Basin Development Challenge (NBDC) project

Comments given by members of the platform

The following comments were given by different participants.

Representative of west Shewa zone agriculture office, mentioned the need to link ICRAF activities with soil and water conservation activities of Oromia Bureaus of Agriculture (BoA). He also mentioned that the need to link the platform with ADPLAC.

Biruk from ILRI commented the need to collect crop productivity and animal performance data to empirically support the research findings. He also suggested the need to:

- See the reduction in parasite load due to zero grazing(keeping the animals around the home stead area and use cut and carry system)
- Integrate improved dairy breeds with feed intervention

- Look for other legumes other than alfalfa
- Think of feed trough for small ruminants as well

Representative of GIZ Oromia Adare mentioned; the need to give special care while selecting the agro-forestry tree species. He also underlined that how to control free grazing should receive attention of this platform and local actors.

Tilahun Geleto, natural resource director of Oromia agricultural research institute has also given the following comments. His comments were related to the need to consider farmers' indigenous knowledge with use of Acacia trees for agro-forestry, the need to have baseline data, the need to construct shade for the feed trough, the need for compacting the areas around feed trough, the need to think of formulating feed ration from desho grass and other feeds and the need to focus on dairy production rather than fattening in typical highland areas like Jeldu. Tilahun has also commented that soil fertility status should be considered to determine the amount of fertilizer to be applied for a given plot of land.

Research and community service activities of Ambo University by Endrias Zewdu

Endrias Zewdu, chairman of the R4D platform and director of research, consultancy and community service directorate of Ambo University has given a brief presentation on research and community service activities and role of Ambo University in Humidtropics. Accordingly, in his presentation, Endrias has mentioned that:

- The university has currently four campuses located in Ambo, Gudar, Woliso and Aware
- The university has passed through different evolutionary stages since its establishment as agricultural high school in 1939 until it becomes full-fledged higher learning institution in 2009
- The university has 65 under graduate programs, 16 post graduate, five colleges, three institutes and one school of law.
- Natural resource management and environmental protection, soil fertility management and crop improvement, climate change and global warming, biodiversity and biotechnology, animal improvement and characterization of their production system, animal diseases and their management, agricultural business, market and value chain analysis, food and nutritional security are the major research thematic areas of faculty of agriculture and veterinary sciences
- There are 114 research projects completed since 2002 and there are 94 ongoing projects
- A total of 126 research articles are published between 2009 and 2015

General discussion and the way forward

General discussion and closing of the two days field visit and meeting were held at the end of the meeting. Accordingly, participants have discussed on the following agendas:

- Field visit for higher officials (mainly decision makers from Oromia Regional Bureaus and OARI)
- Implementation of land use plan
- Suggested additional R4D platform members
- What should be done to control free grazing
- How to increase partners engagement in Humidtropics activities

Agreed up on the following points:

1. Field visit for higher officials- participants have agreed to arrange the field visit within the coming 15 to 20 days. Participants of the field visit are suggested to be from BoA, Oromia Agriculture Research Institute (“IQQO”), agricultural desk of the regional president office, presidents of Ambo and Wollega universities, Oromia land use and environmental protection bureau, Oromia livestock and fishery development bureau and Oromia cooperative agency. Task force with members that include Aklilu Bogale (BoA), Taha Mume (IQQO), Endrias Zewdu (Ambo University) was assigned to approach the officials and arrange for the field visit with representatives of CGIAR centres.
2. Additional R4D platform members suggested are -SG2000, Digital Green, representative of CAADP, Agriculture Transformation Agency (ATA) and Agriculture Growth Program (AGP) were suggested to be member of the platform. Participants also mentioned the need to increase private sector membership.
3. For free grazing- participants have agreed on the need to increase community awareness, consult with community, provide alternative options and use carrot and stick approach where necessary

Finally the meeting was ended with the final closing remark given by representative of West Shewa zone agriculture office, Twelde.

Figure 9: Closing session



In the end Ambo University organized a visit for the R4D platform members its campus including dairy farm, poultry farm and feeding preparation technologies. This visit surprised the members to know that Ambo University started research in the country many years back and that the dairy farm is the first to be established in the country. This kind of visit and the R4D platform meeting organized by rotation to be hosted in different organizations will help networking among the members and holds good potential for future collaboration (Figure 10).

Figure 10: Participants visiting Ambo University research activities on livestock



Annex 1: Agenda of R4D platform field visit at Jeldu and second meeting at Ambo University

Program for the first day – 12th October 2015 –Field Visit to Jeldu Wereda

Time	Activity	Facilitation
7:00–9:00	Participants from Addis Ababa will start their journey to Holeta	Zelalem/Teha/Tsehay/Teklu
11:00–11:30	Participants will meet at Holeta town and start traveling together to Jeldu	Zelalem/Teha/Tsehay/Teklu
11:30–2:00	Participants will travel to Jeldu and have lunch at Jeldu	Zelalem/Teha/Tsehay/Teklu
2:00–4:00	Field visit in Kolu Gelan Kebele found in Jeldu wereda: at least four farmers' fields will be visited to see the introduction and performance of Faba bean improved seed planted in raw versus traditional broad casting integrated with soil bunds stabilized with desho grass, and back yard and private farm land intervention of desho grass and Alfalfa.	Zelalem/Teha/Tsehay/Teklu
4:00-5:30	All participants will travel to Ambo town (Accommodation at Abebech Hotel)	Zelalem/Teha/Tsehay/Teklu

Agenda for second day – 13th October 2015 – second R4D platform meeting at Ambo

Time	Event	Presenter/Facilitator	Chair
Morning: overview of Humidtropics and activities in western Ethiopia			
8:30-9:00	Registration of participants	All	Taha Mume (OARI)
9:00-9:20	Introduction of the agenda and members self-introduction	Zelalem Lema (ILRI)	
9:20-9:30	Opening remarks	Endrias Zewdu (AU)	
9:30-9:45	Overview of Humidtropics program	Teklu Erkossa (IWMI)	
9:45-10:00	Integrated System Research and R4D and innovation platform approach in Humidtropics	Zelalem Lema (ILRI)	
10:00–10:15	Discussion session	Zelalem Lema (ILRI)	
10:15-10:30 - Health break (Tea/coffee) – Group photo by Desalegn			

Time	Event	Presenter/Facilitator	Chair
10:30-11:00	Integrated crop and soil and water conservation activities at Jeldu and Diga	Teklu Erkossa (IWMI)	Endrias Zewdu (AU)
11:00-11:20	Legume CHOICE project overview and its interventions linked with Humidtropics activities at Jeldu	Tamene Temesgen (ILRI)	
11:20-11:40	Integrating feed production and utilization options linked with market works being led by AU and ILRI	Melkamu Derese (ILRI) & Brihane (AU)	
11:40-12:00	Testing of multi-purpose trees integrated with soil and water conservation as well as feed on crop and grazing lands	Hadia Seid (ICRAF)	
12:00-12:20	Potato seed multiplication and DLS in Diga	Dieudonne (CIP)	
12:20-12:40	Feed backs from platform members for each presentations and activities	Zelalem Lema (ILRI)	

Annex 2: List of field visitors and 2nd R4D platform meeting participants at Ambo University

No	Name	Gender	Organization	Role/responsibility within their organization	E-mail
1	Beetel Merga	F	OARI	Women and Children Director	
2	Berhane Mekete	M	Ambo University	Lecturer	
3	Biruk Alemu	M	ILRI Animal health	Researcher	B.A.Gemeda@cgiar.org
4	Hadia Seid	F	ICRAF Research Technician	Hadi03seid@yahoo.com	
5	Ulfina Shifera	M	Diga wereda Administration office	Head	
6	Bayissa Gedefa	M	Bako Agricultural Research Centre	Researcher	bayissafeedef@gmail.com
7	Tilahun Geneti	M	Oromia Agricultural Research Institute(OARI)	Socio-economic & extension researcher	Tilagenet2006@yahoo.com
8	Aklilu Bogale	M	Oromia Region Bureau of Agriculture	Agricultural Extension Head	
9	Tilahun Geleto	M	OARI	Director for Natural Resource Management	Tgeleto@yahoo.com
10	Endriase Zewdu	M	Ambo University -Research, Knowledge & Technology Transfer	Director at AU and Chairman of this platform	Endrias.zewdu@gmail.com
11	Taha Mume	M	OARI-Socio-economics & Agricultural Extension	Director at OARI and Action Site Facilitator for Cluster 4 project	Tehamume2005@yahoo.com
12	Aderie Adugna	M	GIZ-SLM Oromia	Advisor	Aderie.adugna@giz.de

No	Name	Gender	Organization	Role/responsibility within their organization	E-mail
13	Teseman Workineh	M	Ambo University	External Research Expert	
14	Tawolde Tsegaye	M	Ambo Agricultural Zone	Representative	tewoldbbaa@gmail.com
15	Hailu Fufa	M	Jeldu Wereda Administration	Vice head	
16	Teklu Erkossa	M	International Water Management Institute (IWMI)	Researcher, land and water	t.erkossa@cgiar.org
17	Tsehay Regassa	F	ILRI	Consultant	tsehayregassa84@gmail.com
18	Desalegn Tadesse	M	IWMI	Communication Officer	d.tadesse@cgiar.org
19	Tamene Temesgen	M	ILRI- Legume CHOICE project	Coordinator and researcher	t.temesgene@cgiar.org
20	Melkamu Derseh	M	ILRI – livestock feed and nutrition	Post-doc Researcher	m.dershe@cgiar.org
21	Zelalem Lema	M	ILRI-Innovation System in Agriculture	Research Officer	z.lema@cgiar.org
22	Bona Tadesse	M	IWMI MSc student	Doing his research on grazing land in Diga	
23	Ananiya Tesfaye	M	IWMI MSc student	Did his research on crops and soil and water conservation at Jeldu	
24	Keberku Endeshaw	M	IWMI MSc student	Doing his research on crop in Diga	
25	Ebisa Ararsa	M	IWMI MSc student	Doing his research on crop in Jeldu	
26	Bekeshe Abdeta	F	IWMI MSc student	Did research on livestock feed at Diga	