

Stakeholder Workshop 1 Report

Authors: M. Ouessar, R. Hessel, M. Sghaier, C. Ritsema



Date: 01-03-2012

IRA, Tunisia

Deliverable D1.2

Report number 04

Series: Scientific Reports

This report was written in the framework of the WAHARA project – www.wahara.eu



WP1: The potential for WH in an array of biophysical and human environmental settings in rainfed Africa

D1.2 STAKEHOLDER WORKSHOP REPORT

by

M. Ouessar, R. Hessel, M. Sghaier, C. Ritsema

March 2012

1. Context

1.1 Introduction

Water harvesting encompasses a large spectrum of traditional (indigenous) as well as 'modern' technologies. Given that socio-economic factors and stakeholder preferences are pivotal factors determining the potential for success of WH technologies, participatory methods must be adopted to select, monitor and evaluate WH technologies. In fact, lack of stakeholder participation in the development and implementation of WH technologies has been regarded as the most important factor constraining adoption (Oweis and Hachum, 2006).

It is in this framework that the WAHARA project is engaged in applied research together with land users. The idea is to work together with stakeholders to select WH technologies, to adapt the selected WH technologies to the local conditions and monitor and evaluate the performance of technologies, thus contributing to more wide-scale implementation of WHT in Africa.

Within WAHARA, which consists of seven workpackages (WPs), WP1 is dealing with the potential for WH in an array of biophysical and human environmental settings in rainfed Africa. As part of this workpackage, stakeholder analysis and workshops on the potential of WH were conducted. Therefore, potential stakeholders have been identified and were invited for a workshop to learn about the project and to express their experiences with and views on attributes of WH technology development, to identify pressures affecting their livelihoods and constraints and challenges to WH technologies. This formed a first introductory step that is needed to come to a selection of WHT for implementation in WP2. Stakeholder platforms were established with the main functions to ensure that the project activities and results will reflect the reality and aspirations of local stakeholders, to ensure stakeholder involvement throughout the project, and that lessons learned will help to improve planning and policy at all relevant levels of governance. Potential members are key sectoral governmental agencies at the national and regional levels, NGOs, farmer associations, and/or producer organizations. These stakeholder platforms will also play a role in dissemination of project results, and in organizing project events in the different study sites.

1.2 Specific aims

The stakeholder workshops had the following specific aims:

- * Introduction of the WAHARA project to the stakeholders,
- * Learn about their experiences in WH,
- * Identify WH potential in the study area,
- * Establishment of the stakeholder platform.

1.3 Method

To ensure that similar information would be collected in all study sites, WP1 made guideline templates both for the set-up of the workshop itself, and for the workshop report. These templates ensured that the aims listed in section 1.2 received due attention. The templates also promoted that the workshops were conducted and reported in a similar fashion in the study sites, although differences in local circumstances caused some deviations from the proposed procedure.

1.4 Participants

The participants to the workshops were of two main categories: local stakeholders and national organizations:

- Local stakeholders include, in addition the farmers, representatives of the ministries, local and regional authorities, religious leaders, NGOs, etc.
- National stakeholders include Central Ministries, etc.
- In one of the sites, regional organizations were present too (i.e. OSS in Tunisia).

The number of participants ranged between around 30 (Zambia, Tunisia) to more than 100 (Burkina).

2. Workshop discussion & main conclusions

2.1 Introduction of WAHARA to stakeholders

In each of the study sites, the WAHARA project was introduced to the stakeholders. To do this, presentations were given by researchers from the WAHARA partner institutes, and background material was also distributed to the workshop participants:

- * Overview on the WAHARA project: main objectives, methodological approach, expected outputs, involved partners, etc.,
- * WH brochures and booklets
- * Flyers and policy briefs of other projects,

2.2 General discussion

The second aim was to learn about the experiences that stakeholders have with WH. For the selection of WHT later on in the project (WP2) it is relevant to know, for example, which WHT stakeholders now, why they selected these, what they consider to be the main requirements that WHT should fulfill, what they perceive to be the main advantages and disadvantages of the different WHT etc. As conditions are different in all 4 sites, and as the kinds of WHT are also different, this resulted in different discussions in all of the sites. However, some topics were discussed at several sites, in particular the following issues:

Importance of the participatory approach to ensure better results

The participants to the workshops were happy with the WAHARA project methodology which is based on the full involvement of the key stakeholders (especially farmers and extension/development services) from the beginning using a participatory approach. They highlighted that the more you work closely with the final beneficiaries the more you can achieve better results at the end of the project. It was stressed also that they can be actively engaged in all the phases of the project: selection of the technologies, implementation, evaluation and assessment.

Mutual cooperation between the various stakeholders

As many stakeholders are intervening in the study sites, it is very important that WAHARA team can ensure coordination between them. Therefore, the stakeholder platforms which were formed during the workshop can be used in that respect. Generally, the roles are shared as follows:

- WAHARA main research team: coordination
- Farmers: field implementation
- Development/extension agencies: field implementation, liaison with other projects, scaling up where it is possible.
- Authorities: Administration facilitation
- University/research institutions: research components.

Success and failure stories in WH and design of WH and research for development opportunities

In order to be very effective/efficient, the team needs to learn first from the success as well the failures stories either in the working target areas as well as from other sites/regions/countries. In addition, those related issues could be integrated in specific programs and actions for research for development.

Increased threats of climate change effects

This is a crucial issue that requires full attention. In fact, the farmers are becoming increasingly aware of the effects of climate change on their livelihood as the length and frequency of drought periods have been noticed to increase in the last periods. They resulted in crop failures and production losses.

2.3 WH potentials

Based on the local experience of the stakeholders as well the know-how of the developers/practitioners and scientists involved, the participants in all the sites endorsed a mix between traditional/indigenous techniques and introduced/new technologies. However, there was a clear tendency of adoption of the known and or improved technologies and very rarely the adoption of technologies brought from outside the area and/or the country.

The teams used different ranking methodologies for setting the priority WH technologies to be used in the project in their respective study sites have been ranked as follows (Table 1):

Table 1. Priority WH technologies in the study sites.

Tunisia	Ethiopia	Zambia	Burkina
Traditional (jessour, Tabia, ..) Introduced (recharge structures)	Indigenous WH Introduced WH	RWH stream banks Dams	Zai Half moon WH for Legumes Other Tech (Africa)

Note that table 1 only gives a preliminary ranking of WHT, as the selecting of WHT will be done later on in the project in WP2. This selection will be made after WHT have been described with the WOCAT methodology. Outcomes of the stakeholder workshop do provide information that is relevant for making a choice of which technologies should be documented with WOCAT.

2.4 stakeholder platforms

Stakeholder platforms were established in all 4 sites. As mentioned in the introduction, these platforms serve several aims, namely to:

- ensure that the project activities and results will reflect the reality and aspirations of local stakeholders
- ensure stakeholder involvement throughout the project
- ensure that lessons learned will help to improve planning and policy at all relevant levels of governance.
- Play roles in dissemination of project results and to organize stakeholder events.

Selected members covered various kinds of stakeholders such as key sectoral governmental agencies at the national and regional levels, NGOs, farmer associations, and/or producer organizations, as shown in table 2. In all sites, stakeholders welcomed the WAHARA project and expressed their willingness to take part in it.

Table 2. Main stakeholders in the study sites.

Stakeholders/Countries	Tunisia	Ethiopia	Zambia	Burkina
Farmer association	Union des Agriculteurs			
Authorities	Délégation de Béni Khédache	Government Tigray	Traditional leaders Policy makers	
Development agencies	Agriculture Environnement	Agriculture Water	Agriculture Water	Agriculture
NGOs	AJZ Zammour GDA Dhahar	Local communities	Local communities	Collectivités locales
Research/Universities	IRA Univ. Tunis, Gabes, Sfax, Wageningen, Leeds	Univ. Mekele, Wageningen	GART	INEREA Univ. Ouaga
Regional organizations	OSS			

2.5. Conclusions

Although there were some deviations from the set-up proposed in the template for the workshop, the 4 specific aims of the workshops were achieved in all 4 sites. Stakeholders were informed about the WAHARA project, and expressed their willingness to collaborate. They also expressed their opinions about WHT, demonstrating that they do already use WHT and are aware of the crucial role that WHT can play to grow crops in arid and semi-arid environments. This provides WP2 with information that is needed for documenting WHT with WOCAT.

3. Some photos from the study site 1st stakeholder workshops



Burkina Faso



Ethiopia



Zambia



Tunisia

4. References

Oweis, Th., Hachum, A. 2006. Water harvesting and supplemental irrigation for improved water productivity of dry farming systems in West Asia and North Africa. *Agricultural Water Management*, 80: 57-73.

Appendices: Study site first stakeholder workshop reports



WP1: The potential for WH in an array of biophysical and human environmental settings in rainfed Africa

REPORT OF THE STAKEHOLDER ANALYSIS WORKSHOP ON POTENTIAL WH IN THE TUNISIAN STUDY SITE

by

M. Ouessar, M. Sghaier, M. Ben Zaied, M. Abdeladhim

November 2011

1. Introduction

Within the WP1 dealing with the potential for WH in an array of biophysical and human environmental settings in rainfed Africa, the stakeholder analysis and workshop on potential of WH. Potential stakeholders have been identified and invited for a workshop to learn about the project and express their experiences with and views on attributes of WH technology development, identify pressures affecting their livelihoods and constraints and challenges to WH technologies. Stakeholder platforms was established with the main function is to ensure that the project activities and results will reflect the reality and aspirations of local stakeholders, and (vice versa) that lessons learned will help to improve planning and policy at all relevant levels of governance. Potential members are key sectoral governmental agencies at the national and regional levels, NGOs, farmer associations, and/or producer organizations. These stakeholder platforms will also play a role in dissemination of project results, and in organizing project events in the different study sites.

1.1. Overview

As the WAHARA project was based to be carried out in full synergies with other research or development projects in the study region, the workshop was conducted in two steps: the first step was organized jointly with the final DESIRE workshop and the AFROMAISON stakeholder workshop on June 8th. The second part was organized on the occasion of the celebration of the international day of desertification on June 17th.

1.2. Specific aims

- * Introduction of the WAHARA project to the stakeholders,
- * Learn about their experiences in WH,
- * Identify WH potential in the study area,
- * Establishment of the stakeholder platform.

1.3 Participants

Numerous preliminary contacts have been made with most of the local stakeholders with whom our team is used to work with them especially in the frame of other finished (WAHIA, JEFFARA, DESURVEY, etc.) and/or ongoing projects (DESIRE, AFROMAISON, etc.).

The participants to the workshop were of two main categories: local stakeholders and national and regional organizations:

Local stakeholders include, in addition to some farmers, representatives of the Regional department of the ministry of agriculture in Médenine (divisions of soil and water conservation, forestry, statistics, etc.), Regional office of livestock and rangelands in Médenine, local authorities (délégué, revolution coordination team), NGOs (AJZ, ...),

National stakeholders include General directorate for soil and water conservation in the Ministry of agriculture (Tunis) and the UNCCD focal point.

Regional organizations include the Observatory of Sahel and Sahara (OSS).

1.4 Background material distributed to participants

Background material distributed to the participants:

- * Overview on the WAHARA project: main objectives, methodological approach, expected outputs, involved partners, etc.,
- * Flyers of LADA, DESIRE and AFROMAISON projects,
- * Policy brief from SUMAMAD project,
- * etc.

1.5 Venue information

The meeting was held in the premise of the AJZ which is among the cooperating and most active NGOs operating in the study area. In addition, the venue is almost in the middle of the study site.

1.6 Agenda

The agenda included presentations on the WAHARA project, synergies with other research project, development project to be connected with WAHARA, .

The detailed agenda is included in the annex.

1.7. Presentations

The given presentations could be summarized as follows:

- DGAFTA (Min. Agri., Tunis): Introduction to LADA project in Tunisia, its achievements,
- OSS (Tunis): Presentation of the monitoring and evaluation system of desertification.
- IRA (Médenine): Results and achievement of DESIRE in the study sites: monitoring of the water balance in the water harvesting techniques, effects of rangelands resting, modeling of soil degradation and scenarios, WOCAT (approaches, technologies, mapping).
- IRA (Médenine): Brief introduction of WAHARA project: objectives, expected outcomes, synergies, etc.
- CRDA (Médenine): Lessons learned and main achievements of the 1st phase I (2001-2007) of the PGRN project and planned activities for the 2nd phase (2010-2014).

2. Workshop discussion & main conclusions

2.1. General discussion:

The discussion have focused on the main following issues:

- * Importance of the participatory approach to ensure better results,
- * Mutual cooperation between the various stakeholders: research institutions, universities, development agencies, NGOs, socio-professional organizations, farmers, authorities, etc.
- * Importance of the monitoring and evaluation of the projects,
- * Increased threats of climate change effects especially the length and frequency of drought periods and the urgent need for adaptation actions and strategies.

2.2. WH potentials based on parameters listed in the workshop guidelines with a summary table.

Based on the WOCAT data base and DESIRE experiences, the participants endorsed the list of WH technologies:

- Traditional/Indigenous: Jessour, Tabias, Cisterns.
- Introduced/new: Recharge check dams, spreading check dams, recharge wells.

2.3. WH ranking based on the criteria mentioned in the workshop guidelines with a summary table.

The technologies have been ranked as follows:

Rank	Technology
1	Jessour/Tabia combined to supplemental irrigation and cistern
2	Jessour/tabia
3	Spreading check dam
	Cistern
4	Recharge well combined with check dam
5	Recharge check dam

2.4. Conclusion or summary of the day

The WAHARA stakeholders have been identified and informed of the project and its objectives and approach. The WAHARA will be implemented in full synergies either with other development projects or research for development projects.

3. Follow up from the workshop

3.1. Information on post-workshop activities

- * Distribution of minutes and presentations to the participants,
- * Establishment of the stakeholder platform,

3.2. Information on agreed further contact with participants

- * Organize regular individual meetings and workshops,
- * Maintain exchanges through email circulation and other Medias,
- * Foresee the integration of WAHARA activities within the other development programs.

3.3. Planning

Action	Date
Circulation of meeting minutes	1 st July 2011

Continuation of the actions launched within the framework of DESIRE project	September 2011
Coordination workshop among projects	14-16 December 2011
Preparatory meeting for the WAHARA annual general meeting to be held in Ethiopia	February 2012

4. Annex

Agenda

Béni Khédache, 8 June 2011 (1st part)

Hour	Presentation	Authors
09h-09h30	Opening	IRA/CRDA/OSS
09h30-10h00	LADA project	DGACTA/IRA
10h00-10h30	Monitoring and assessment t of desertification	OSS
10h30-11h15	DESIRE project achievements WAHARA project introduction	IRA
11h15-11h30	PGRN project	CRDA
	Coffee break	
11h45-14h30	Open discussion Wrap up	All

Béni Khédache, 17 June 2011 (2nd part)

Hour	Presentation	Authors
09h-09h30	Opening	IRA/CRDA/Délégué Béni Khédache
09h30-10h15	Evaluation of DESIRE site interventions	IRA
10h15-11h00	Ranking of WH for WAHARA project	IRA / All
	Coffee break	
11h15-13h15	Open discussion	All
13h15-13h30	Stakeholder platform	All
13h30-14h00	Planning	All
14h00-14h30	Wrap up	All

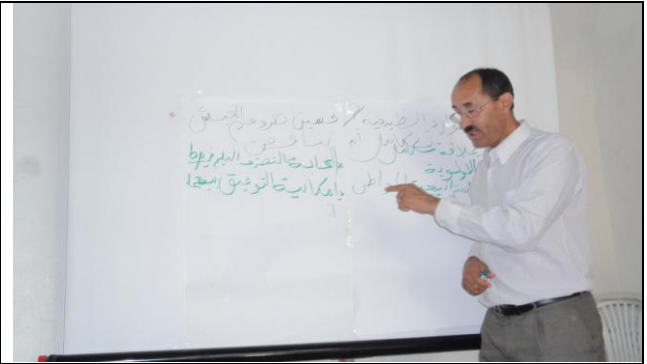
DGACTA: General Directorate for Soil and Water Conservation (Min. Agriculture, Tunis)

CRDA: Regional Department of the Ministry of Agriculture, Medenine

OSS: Sahara and Sahel Observatory, Tunis

IRA: Arid Zone Institute, Medenine

Some photos





BURKINA FASO



CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE ET TECHNOLOGIQUE

(C.N.R.S.T.)

INSTITUT DE L'ENVIRONNEMENT ET DE RECHERCHES AGRICOLES

(I.N.E.R.A.)

REPORT OF STAKEHOLDERS WAHARA BURKINA FASO

Dr Hamado SAWADOGO

December 2011

Introduction

Le projet WAHARA« Water Harvesting for Rainfed Africa » a démarré depuis le 1^{er} Mars 2011. Dans sa mise en œuvre effective, à partir du mois d'avril, une série d'activités d'information, de sensibilisation et de repérage ont été conduites dans les zones d'intervention. Le projet a entrepris en juillet le processus d'élaboration de l'état des lieux des technologies et stratégies probantes existantes de collecte et de gestion de l'eau. Un accent particulier est mis sur les technologies d'adaptation aux effets des changements climatiques.

Les chercheurs ont présenté d'abord le projet WAHARA aux participants composés de toutes les catégories (administration publique, services techniques, collectivités communales, Organisations de Producteurs). Les présentations ont porté essentiellement sur le point des technologies en application dans les zones concernées et surtout l'identification des contraintes qui empêchent l'application des technologies de collecte et de gestion de l'eau et des stratégies d'amélioration des moyens d'existence et de gestion des ressources naturelles.

Elles se sont déroulées en plénière par séquences entrecoupées de discussions et de pauses jusqu'à la fin des informations à partager avec les participants. Ces présentations du projet ont été suivies de sessions en travaux de groupe des différents participants ce qui a abouti aux choix des technologies et des stratégies devant être expérimentées dans les sites d'intervention du projet.

1. Objectif

L'objectif de ces ateliers est d'une part, d'informer les populations sur les activités du projet WAhara et de recueillir leurs avis, observations dans le but d'améliorer les diagnostics, et d'autre part, définir avec les producteurs pour chaque site, les technologies et stratégies éprouvées, à retenir pour leur expérimentation.

2. Déroulement

Les populations ont pris connaissance des résultats de l'étude d'état des lieux des technologies et stratégies de gestion de la fertilité des sols et de gestion durable des ressources disponibles dans les sites d'intervention. Des questions d'éclaircissement posées par les participants ont eu des réponses claires. Elles ont permis de lever l'équivoque à savoir qu'il s'agit d'un projet de recherche-action qui diffère des projets d'investissement. Les contributions apportées par les participants ont été prises en compte pour la suite des activités.

Il y a eu l'invite des participants à réfléchir aux différentes activités. Les ébauches de solutions à chaque contrainte identifiée ont été discutées et validées en groupe en vue de l'application des technologies et stratégies éprouvées.



Figure1 : Lancement des activités du projet Wahara

Enfin, des petits groupes de travaux entre les représentants des sites et communes de chaque site ont été organisés et présenté les technologies et stratégies choisies et les raisons de leurs choix. Ils ont fourni à chaque fois qu'il était possible des informations sur les lieux où appliquer ces technologies et les porteurs des expérimentations individuelles et collectives.

L'équipe de recherche a donné aux collectivités/communautés des éléments d'appréciation sur certaines technologies ou stratégies proposées (la faisabilité ou non de leur choix) et pour d'autres, les choix seront validés en fonction de leur faisabilité après une analyse approfondie de l'équipe de l'étude.



Figure 2 : Restitution des travaux en public par chaque groupe

3. Résultats

Le tableau suivant donne un résumé du consensus sur les technologies à tester en hivernage.

Technologies	Avantages	Niveau Adoption	Formations nécessaires	Sites
Cordons pierreux + Compost + Microdose et Variété de sorgho Kapelga	Augmentation du rendement Régénération Naturelle Assistée (RNA) Réhabilitation des terres	Bonne	CES/DRS et Compost	Ziga, Somyaga
Zaï + Compost + Microdose + Variété de sorgho Kapelga	Augmentation du rendement Régénération Naturelle Assistée (RNA) Réhabilitation des terres	Bonne	CES/DRS et Warrantage	Ziga, Somyaga
Demi lunes + Compost + Microdose + Variété de sorgho Kapelga	Augmentation du rendement Régénération Naturelle Assistée (RNA) Réhabilitation des terres	Faible	CES/DRS et Compost	Ziga, Somyaga
Cordons végétalisés + Niébé	Augmentation du rendement, maintien et amélioration de la fertilité, Amélioration des revenus	Bonne	Bonnes pratiques agricoles	Ziga, Somyaga
Associations céréales/légumineuse	Maintien de la fertilité Amélioration des revenus	bonne	Bonnes pratiques agricoles	Ziga, Somyaga

	des revenus			
--	-------------	--	--	--

- Alternative pour un meilleur accès aux intrants agricoles

Tableau 2 : Technologies sylvo-pastorales

Technologies	Avantages	Adoption	Formations	Sites
Information/ Sensibilisation sur les textes règlementaires et les conventions locales	Meilleure connaissance des textes en vigueur sur la GRN, adoption de modes consensuels de gestion	faible	Animation de groupe	Somyaga Ziga
Délimitation de piste à bétail et de zones de parcours	Meilleure gestion du cheptel, réduction des conflits agriculteurs/éleveurs	faible	Formation	Somyaga Ziga
Warrantage	Acquisition des intrants moyennant le stockage de la récolte ; Meilleure gestion de la fertilité des terres	faible	Formation en gestion des stocks	Somyaga Ziga
Maraîchage avec urée Super Granulée	Augmentation des revenus des producteurs, Meilleure gestion de la fertilité	faible	Formation sur le maraîchage	Somyaga Ziga
Ensemencement des parcours	Enrichissement des parcours, Meilleure gestion des pâturages	faible	Formation	Somyaga Ziga

- Information, sensibilisation sur la nécessité de tels ouvrages
- Renforcement des connaissances sur les textes et réglementation en matière de gestion des ressources naturelles ;

Une idée du dispositif expérimental a été esquissée avec une hypothèse d'expérimenter des technologies provenant des autres pays où le projet est exécuté. Toutefois, il a décidé de faire des expérimentations au cours de l'hivernage soit avec le zaï, soit avec les demi lunes et des combinaisons de fumure organique et minérale.

Dispositif expérimental

Témoin	Zaï	1ere technologie issue d'autre pays Wahara	2 ^{ème} technologie issue d'autre pays Wahara
	Compost		

Pour tenir compte du genre, il a été proposé que les activités proposées intègrent la culture des légumineuses dans des champs avec cordons pierreux. L'arachide et le niébé sont particulièrement recherchés par les femmes.



Figure 3: Participation importante des femmes

Conclusion

La rencontre a connu un succès avec des débats francs et des propositions concrètes pour démarrer l'expérimentation pour garder la confiance avec les producteurs. Les technologies de gestion de l'eau contribuent à l'atténuation des effets des changements climatiques.



Water Harvesting for Rainfed Africa: *Investing in Dryland Agriculture for Growth and Resilience*

**Stakeholder Workshop Report
(Mekelle University)**

Workshop date: 28 January 2012

Venue: Saint Josef Hall, Wukro, Tigray, Ethiopia

February 2012

Mekelle, Ethiopia

1. Introduction

WAHARA project follows a transdisciplinary approach to develop innovative, locally adapted water harvesting solutions with wider relevance for rainfed Africa. Stakeholder analysis and workshop is one of the activities planned to be carried out for selecting and adapting technologies that have synergies with existing farming systems and that are preferred by local stakeholders. The objectives, methods used and results of the workshop are indicated below.

1.1 Objectives of the workshop

The main objectives of the workshop were:

- Inform and introduce the “WAHARA” project to partners to generate interest;
- Learn about the main used WH technologies (advantages, importance for livelihood, problems), potential for improvement and expected impacts; and
- Set-up stakeholder platform.

1.2 Methodology

The following steps were followed:

- a. Perform a stakeholder inventory: individuals and organizations involved in water harvesting and in natural resources management in the study area were identified. The study area covers four administrative areas called “woredas” namely: (1) Klete Awlaelo (with 17 smallest administrative units called Tabias”, (2) Atsbi (with 4 Tabias), (3) Hawzien (with 8 Tabias), (4) Saesi Tsaeda Emba (18 Tabias) that drain to the watershed of the Suluh, Genfel and Agule. Since the majority of natural resources management is done at Tabia level, one representative from each Tabia was invited. In addition, experts and representatives of the different government sectors (mainly natural resources management, irrigation, water resources, and rural development) were invited from each of the four woredas. A total of 63 people were invited from the four woredas.
- b. The bureau of agriculture and rural development of Tigray, and the Bureau of water resources of Tigray were invited for the workshop but because of other urgent matters are not able to attend the meeting.
- c. Facilitation plan and agenda for the stakeholder workshop was assigned.
- d. The stakeholder workshop was carried out which involved: (i) presentations and general discussions, (ii) setting discussion points and group formation, (iii) stakeholder presentations and discussions.

2. Presentations and general discussions

The following presentations were first made by the WAHARA Project team members of the Mekelle University to introduce the objectives of the project and the stakeholder workshop as well as an introduction into water harvesting technologies in Tigray.

- Overview of the WAHARA project;
- Objectives of the stakeholder workshop and the need for open discussion; and
- Water harvesting technologies in Tigray: *Practices, opportunities and challenges*.



Plate: WAHARA project stakeholder workshop, Jan. 28, 2012, Wukro, Ethiopia.

The presentations were then followed by general discussion. The most important issues forwarded by the participants of the stakeholder workshop are presented below.

- The Government of Ethiopia in general and the Regional Government of Tigray in particular are currently working very hard to ensure the ownership of at least **One Water Bank** per farmer to guarantee reliable water source for agriculture. In view of this, the WAHARA project is launched at the very right time.
- Farmers are the most important sources of problems and solutions. However, these aspects are mostly overlooked by researchers. The current approach adopted by the WAHARA project to identify the practical problems of the farmers, learn the strengths and weaknesses of current practices implemented, identify researchable issues and undertake participatory research is quite encouraging and needs to be adhered to.

3. Setting discussion points and group formation

After a preliminary presentation of issues that need to be addressed by the WAHARA Project team members and subsequent discussion by the participants, the following aspects were set as important talking points of the stakeholder workshop.

- Major potentials and constraints of agricultural production in the study area;
- Major water harvesting and watershed management techniques in the study area (introduced and indigenous): types, where implemented, selection criteria, design criteria (height, width, spacing, etc), strengths, weaknesses/challenges;
- Social aspects with emphasis on adoption: major determinants of adoption, status of adoption, degree of variation in adoption and why;
- Success stories/best practices in water harvesting and watershed management including the major contributing factors and lessons learnt;
- Failure stories/poor practices in water harvesting and watershed management including the major contributing factors and lessons learnt;
- Status and impacts of water harvesting and watershed management practices in the study area;
- Exemplary initiatives taken by farmers and/or experts to modify the standard design of water harvesting techniques and results/improvements achieved;
- Major researchable issues to improve the technical, social, economical and environmental benefits of water harvesting technologies.

Two groups were then formed based on agro-ecology and water harvesting/natural resources management experience as well as common watershed boundaries to discuss on the agreed agendas and present their views to the general assembly. Klete Awlaelo woreda and Atsbi woreda representatives were in one group, while Hawzien woreda and Saesi Tsaeda Emba woreda representatives were in another group.

4. Stakeholder presentations and discussions

Presentations were made by individual groups regarding the aforementioned issues followed by general discussions. The summary of the final agreements reached by the stakeholders are presented below.

4.1 Major potentials and constraints of agricultural production in the study area

4.1.1 Major potentials

The major potentials of the study area include:

- Sufficient surface and groundwater resources;
- Suitable land resources;
- Sufficient active labor; and
- Suitable agro-ecology.



Plate: WAHARA project stakeholder workshop (group discussion), Jan. 28, 2012, Wukro, Ethiopia.

4.1.2 Opportunity

The opportunities and mechanisms currently in place that encourage improved agricultural productivity and production as identified (and agreed) by stakeholders include the following:

- Appropriate Government Policy and Strategy including the Agricultural Development Lead Industrialization (ADLI) policy launched in 1992 and the current Five year “Growth and Transformation Plan (GTP)”. In both cases, conservation based agricultural development is given a top priority.
- Improved socio-economic and infrastructural developments and provisions such as education, roads, telecommunication, electric power, health, etc.
- Prevalence of peace.

- Improved skill created in water harvesting technology and integrated natural resources management as a result of the practical experiences gained during the last 20 years at different levels, particularly skill created at farmers' levels.
- Increase in the number of model farmers in technology adoption and scale-up.
- Existence of clear organizational set-up in natural resources management starting from National to the grass-root level (Federal – Regional – Woreda – Tabia – Working team/group).
- Presence of development agents (crop, animal husbandry, and natural resources experts) at the lowest administrative unit of the government (Tabia) to support the local communities and farmers.

4.1.3 Constrains

The major constraints of agricultural production in the study area include:

- Moisture stress and drought as a result of erratic rainfall and high proportion of runoff loss through there is a general reduction in many parts of the study areas.
- Poor soil potential including shallow soil depth and poor fertility.
- Frost (mainly in high altitude areas), diseases and weed problems.
- Limited capacity in: (a) the selection of appropriate water harvesting technology and crop, (b) provision of spare parts, and (c) proper design, construction, operation and maintenance of water harvesting structures, etc.
- Poor attitude: many farmers are infected by the food aid syndrome than in constructing household water harvesting structures of their own. For instance, they prefer to work on Safety Net programs to get 3 kilograms of grain per day than working on their own farm land.
- Production/harvest management problem: extravagant spending of harvest for different cultural and religious purposes (e.g. Teskar, wedding, religious commemoration, etc).
- Poor ownership and responsibility feelings especially on communal water harvesting and natural resources management sites.
- Short sightedness in natural resources management and water harvesting as a result of farmers' interest on immediate benefits at the cost of long-term sustainability. For instance, quarrying cultivable areas for temporary income generation from construction material sell; selling lining and construction materials of water harvesting structures (e.g. PVC, plastic lining, cement, steel pipes, etc) which was supplied by government.
- Limited working days due to religious holidays.
- Poor skills and practices in the sustainable utilization of available natural resources which can be explained in terms of the poor management of irrigated lands, poor irrigation water management, free grazing in area closures and treated gullies, digging of hand-dug wells at close spacing, cutting trees in closed areas, etc.
- Lack of proper follow-up and technical support mainly for small-scale irrigation schemes including dams, diversion weirs, groundwater wells, etc.
- Application of agricultural inputs such as fertilizer, pesticide and insecticide without proper investigation of the land condition.

- Introduction of similar water harvesting technologies for different agro-ecologies without comprehensive evaluation of the applicability of a certain technology at a specific condition.
- Migration of young people (active/productive labor) to urban areas and Middle East countries.

4.2 Major water harvesting and watershed management techniques in the study area

4.2.1 Indigenous technologies

The farmers in the study area have been using the following indigenous moisture conservation, water harvesting and watershed management techniques:

- Construction of demarcation bunds (Armo) between farm holdings or within a farm to reduce slope length and gradient;
- Plantation of indigenous drought tolerant plants such as “ERE” to stabilize bunds;
- Application of manure to farms;
- Fallowing of farm lands;
- Crop rotation between cereals and legumes;
- Construction of diversion channels to protect farm lands from damage from upstream runoff and drainage channels to safely remove excess runoff from the farm lands;
- Construction of traditional spate diversion systems to divert seasonal flood from highlands to low lying alluvial valleys;
- Construction of earth bunds to harvest moisture and reduce erosion;
- Application of ash to farms to increase the soil fertility of the soil;
- Planting indigenous trees that can fix nitrogen in the soil;
- Construction of hand-dug wells for household and irrigation purposes;
- Construction of community ponds (Horeye) especially for livestock watering;
- Spring development;
- Incorporating crop residue to farms.

Detailed information on the different water harvesting practices is presented under a separate document “Water Harvesting Practices in Tigray”.

4.2.2 Introduced technologies

The moisture conservation, water harvesting and watershed management techniques that have been introduced in the study area include:

- Area closures along with plantation of indigenous and introduced grasses, bushes and trees;
- Application of compost to farms;
- Use of organic and stone mulching to minimize evaporation loss;

- Application of inorganic fertilizers;
- Contour ploughing;
- Contour soil and stone bunds;
- Stone faced soil bunds;
- Stone/soil/stone faced soil bund with trenches;
- Hillside stone terraces;
- Bench terraces;
- Stone faced deep trenches;
- Percolation ponds;
- Eyebrow basins;
- Negarim micro-catchments;
- Check dam ponds: concrete, masonry, or mixed;
- Gully rehabilitation check dams: gabion, masonry, concrete or mixed;
- Semi-circular bunds;
- Modern spate systems;
- Drip irrigation systems: conventional and family kits;
- Perennial river diversion weirs;
- Small-scale dams (with sized from less than 10m to over 25m heights): for water storage as well for sediment trap;
- Protected spring development;
- Motor pumps;
- Groundwater wells: deep, shallow, hand-dug wells;
- Cisterns;
- Ponds;
- Roof water harvesting.
- Hillside conduits are tried in limited cases and need to be scaled-up.

Detailed information on the different water harvesting practices is presented under a separate document “Water Harvesting Practices in Tigray”.

4.2.3 Strengths and weaknesses of water harvesting and watershed management efforts

The strengths witnessed so far in relation to the on-going water harvesting and watershed management efforts include:

- Improved soil and water conservation;
- Increased groundwater recharge;
- Increased discharge and number of springs;
- Increased production/yield;
- Increased regeneration of natural vegetation and animal feed.

On the other hand, the following weaknesses have also been identified and needs due attention.

- Lack of proper management and maintenance of interventions especially on communal sites such as letting livestock into closure areas and maintenance negligence of physical structures;
- Occasional drawbacks of community participation in the selection and implementation of technologies;
- Technical limitations in the design, construction, monitoring, evaluation and implementation of desired modification;
- Hosting of destructive rodents such as mice by some structures such as stone bunds in cultivated lands;
- Lack of proper prioritization of intervention sites which can be explained by the implementation of water harvesting technologies at lower catchment before treating the upper catchments. This approach has been the cause of flood and subsequent damage of downstream water harvesting structures;
- Lack of contour alignment during the construction of water harvesting structures by farmers which could easily have been done by locally made, easy to operate by farmers and no-cost instruments such as A-frame and line-level;
- Water logging problems downstream of dams in some areas.

4.3 Social aspects with emphasis on adoption

The farming community in the study area is very well aware of the positive impacts of water harvesting and watershed management practices as each individual practically observes it. However, there seems to be reluctance to implement household level water harvesting structures because of the prevalent "Food Aid Syndrome". Farmers prefer to participate in the construction of community water harvesting structures for two main reasons, namely, they generate income from Safety Net work program and the management is handled by the Government. On the other hand, if a farmer is asked to construct a household water harvesting structure, he would always ask for a financial or material support. In general, farmers prefer to spend their time in Safety Net work program than on their farmland.

As a result of over 20 years of practice and learning, a strong and sustainable "Development Army" has been created in natural resources management. Unfortunately, however, this is not the case in irrigated agriculture and needs to adopt and replicate this experience.

Any technology should start with success if peoples have to adopt it. Some water harvesting technologies have not been accepted due to lack of community participation and failures in the implementation (e.g. Horeyo, Baska, etc). In addition, voluntary contribution of free labour by farmers should be determined in a participatory manner. Otherwise, farmers will feel urged and unhappy.

Planning of water harvesting and watershed management should also be made rationally. Ambitious planning that does not take the dependable human, financial and material resources into account could end up in under achievement.

4.4 Success stories/best practices in water harvesting and watershed management

There are many best practices in soil and water conservation and natural resources management in the study area including area closure, gully treatment and deep trenches. For instance, the area closure and participatory watershed management at Abraha Atsebaha and Negash watersheds in Kilite Awlaelo Wereda has resulted in the following incredible benefits to the environment and the community.

- The advancement of gullies was halted and the gullied area was reclaimed moisture stored behind the check dams is used for growing fruit trees;
- The farmland is safe from inundation by flood and silt deposition;
- The groundwater is adequately recharged and is being used for irrigation, livestock and domestic water supply;
- The hillsides are currently covered with indigenous and introduced grasses, bushes and trees;
- Increase in yield and subsequent income:
 - improved harvest of fodder grass from marginal lands has increased the productivity of livestock;
 - production of honey has increased due to the enhanced biomass availability;
 - cereal productivity has increased and vegetable and fruit production introduced.

The area closure and participatory watershed management introduced at Barka Adi-Sebha in Atsbi Wereda followed by partitioning of the watershed to landless youngsters is another exemplary initiative that has converted a conserved land into income generating hub. The youngsters are currently harvesting apple and improving their livelihood.

The increase in the number of best practices and success stories is brought by implementing various means such as organization of experience sharing visits and use of various awareness creation mechanisms (Invitation of religious leaders and the elderly to play a lead role in the efforts, invitation of newly married couples to spend part of their honeymoon in the watershed and organization of tea party at the watershed). It was, however, noted that the scale of best practices is still limited and needs further effort to scale it up.

4.5 Failure stories/poor practices in water harvesting and watershed management

As are success stories, some failure stories/poor practices in water harvesting and watershed management has also been witnessed in the study area.

i. Household ponds (Horoye)

Most household ponds has failed for various reasons such as

- Poor participation of the community during planning and implementation;
- Poor construction: since people were being paid for the labour they used to construct their own pond, they were simply digging at locations that does not even have catchment just for the sake of the immediate income;
- Sale of lining materials to generate immediate income at the cost of long-term benefit;
- Poor satisfaction: since the amount of water that can be stored by ponds is small, farmers do not give much attention to maintaining them.

ii. Hillside stone terraces

Hillside stone terraces used to be filled with sediment quickly demanding an increase in height thereby requiring more labour input. As a result, they are now being replaced by stone faced deep trenches.

iii. Poor adoption of technologies

Technologies that start with failure are unlikely to be quickly taken up by farmers. For instance, hand dug wells are one of the effective water harvesting techniques in the study area. However, in some cases, experts excavate at locations other than recommended by the farmers and end up in no water bearing aquifer. Afterwards, farmers loose confidence in the technical capacity of the expert to assist them.

The other factor affecting technology adoption is age. Most of the people who have land are old people who are slow in technology up-take. Young people do not have land though they are willing to adopt technologies.

iv. Variation in risk taking

Old farmers do not take risk: they do not take loan to invest on irrigation, etc. This has contributed to the slow development of irrigation.

4.6 Status and impacts of water harvesting and watershed management practices

- There is a change and improvement in SWC, natural resources management and irrigation practices.

- Best practices are coming and being scaled-up though not at the required level.
- There is change in the awareness and attitude towards natural resources management and irrigation.
- Watersheds are improving in all aspects: moisture, productivity, etc.
- Gully treatment is leading for improved economic and social conditions of the communities and for improved environment.

4.7 Exemplary initiatives taken by farmers and/or experts to modify

Three exemplary initiatives were discussed. The first was the gully treatment efforts being made by individual farmers. The second was the modification being made by individual farmers on the design of Cisterns. The standard design of cisterns is 8 m wide by 8 m deep. However, this width creates problem to cover it as getting 8 m long tree is difficult. As a result, farmers are using 4 m wide cisterns with increased length to compensate for the volume. The last exemplary initiative discussed was the modification made to deep trenches by experts and farmers. The original standard design of deep trenches was 0.5 m wide by 0.5 m long. However, this was found very small to accommodate the runoff and sediment. As a result, it is now modified to 1.5 m wide by 2 m long and has proven to be effective.

4.8 Major researchable issues

The following most important researchable issues were identified by the stakeholders.

- Determination of the type and specification/design of water harvesting technologies for various agro-ecologies;
- Investigation of potentials and technologies for large scale irrigation using groundwater systems (deep wells);
- Identification of low-cost technologies to tap perennial rivers for irrigation purpose especially in rugged topography;
- Bench-mark based social economic, technical and environmental impact assessment of integrated watershed management and water harvesting technologies including dams;
- Assessment of the efficiency of water management in irrigation schemes;
- Assessment of the socio-cultural aspects of water harvesting and watershed management in terms of participation, adoption, risk, scaling-up, etc (Dr. Firedu...);
- Establishment of agro-ecology and soil type based fertilizer types and rates;
- Introduction of mechanisms to convert area closures into income generating sites;
- Identification of best practices from other areas that could suit to the socio-economic, topography and agro-ecology of Tigra and pilot testing, calibration and scaling up.

Annex I: Stakeholder workshop Program

No.	Event	Speaker	Time	Chairman/Facilitator	Rapporteur
1	Registration	-	8:30 – 9:00	Berhan Halefom	-
2	Opening remark	Guest of honour	9:00 – 9:10	Dr. Mohammed A.	Dr. Eyasu Y.
3	Overview of the WAHARA Project	Dr. Kifle W.	9:10 – 9:30	Dr. Mohammed A.	Dr. Eyasu Y.
4	Objectives of the stakeholder workshop and the need for open discussion	Dr. Eyasu Y.	9:30 – 9:40	Dr. Mohammed A.	Dr. Kifle W.
5	Water harvesting technologies in Tigray: <i>Technical issues</i>	Dr. Kifle W.	9:40 – 10:00	Dr. Mohammed/Dereje A.	Dr. Eyasu Y.
6	General discussion	Participants	10:00 – 10:30	Dr. Mohammed/Dereje A.	Dr. Eyasu Y.
7	Health break	-	10:30 – 11:00	Berhan Halefom	-
8	Group formation and assignment of discussion facilitators	-	11:00 – 11:05	Dr. Mohammed/Dereje A.	Dr. Eyasu Y.
9	Introduction of discussion issues and expected outputs	Dr. Eyasu Y.	11:05 – 11:20	Dr. Mohammed/Dereje A.	Dr. Kifle W.
10	Parallel session <ul style="list-style-type: none"> • Discussion by Group 1 (Kilte Awlaelo and Atsbi) • Discussion by Group 2 (Saesi Tsaeda Emba and Hawzein) 	Participants Participants	11:20 – 12:30 11:20 – 12:30	Dr. Mohammed/Dereje A. Dr. Mohammed/Dereje A.	Dr. Eyasu/Kifle Dr. Eyasu/Kifle
11	Lunch break	-	12:30 – 14:00	Berhan Halefom	-
12	Parallel session (Continued) <ul style="list-style-type: none"> • Discussion by Group 1 (Kilte Awlaelo and Atsbi) • Discussion by Group 2 (Saesi Tsaeda Emba and Hawzein) 	Participants Participants	14:00 – 16:00 14:00 –	Dr. Mohammed/Dereje A. Dr. Mohammed/Dereje	Dr. Eyasu/Kifle Dr.

			16:00	A.	Eyasu/Kifle
13	Health break	-	16:00 – 16:30	Berhan Halefom	
14	Presentation by Group 1	Discussion facilitator	16:30 – 17:00	Dr. Firedu N.	Dr. Eyasu/Kifle
15	Presentation by Group 2	Discussion facilitator	17:00 – 17:30	Dr. Firedu N.	Dr. Eyasu/Kifle
16	General discussion and reflection	Participants	17:30 – 18:30	Dr. Firedu N.	Dr. Eyasu/Kifle
17	Closing remarks and the way forward	Dr. Kifle W.	18:30 – 18:40	Dr. Firedu N.	Dr. Eyasu Y.



Promoting Sustainable Agriculture

Stakeholder Workshop on Water Harvesting for Rainfed Africa

Kick-Off Meeting

Date: 19th January, 2012

Venue: Magoye Study Site

1 Introduction

1.1 Overview

Have extracted from WAHARA-Investing In Dryland Agriculture for Growth and Resilience fact sheet:

“Water productivity in Africa is the lowest in the world and production increases have been slow than anywhere else. The low agricultural productivity is further stressed by population growth and climate change. At the same time it signals a large potential for improvement.

With agriculture in Africa being largely rain-dependent an important key to change lies with improved water harvesting – at field level as well as catchment level. This is where the WAHARA project hopes to contribute to economic development and sustainable livelihoods. WAHARA aims to introduce innovative water harvesting technologies in different geographical regions in Africa. WAHARA will work in selected project sites in Burkina Faso, Ethiopia, Tunesia and Zambia”

1.2 Specific Aims

The main objective of the stakeholders’ meeting was primarily to introduce the WAHARA Project to the farming community in the study area. In other words it was our kick-off meeting as to inaugurate the launch of WAHARA Project in the Study Site area.

1.3 Participants

There were 36 participants drawn from various sectors of the farming community. This comprised of farmers, Ministry of Agriculture and Livestock Extension officers, civic leaders. We failed to get the policy makers eg. District Commissioner.

Background material distributed to participants.

Since it was our first meeting not much materials were distributed, let alone a few:

- a. WAHARA – Investing In Dryland Agriculture for Growth and Resilience. The fact sheet gives an overview of what WAHARA Project is all about.
- b. Water harvesting technologies mitigating agricultural drought. A chart showing both the in-field micro-catchment water harvesting technologies.
- c. A chart on *“Rainfall partitioning in farming system in the semi-arid regions”*. Message was on more crop per drop of water”, based on green Water Concept. Adapted from “Conservation Farming a Strategy for improved agricultural water productivity among smallholder farmers in drought prone environment” by Rockstrom J. & Steiner K (2003). In proceedings of the symposium and workshop on “Water Conservation Technologies for Sustainable Dryland Agriculture in Sub-Saharan Africa. IWMI. Bloemfontein, South Africa, 8-11 April, 2003.

1.4 Venue Information

Venue information is contained in the Magoye Study Site description. This was dispatched on 31 January, 2012 (ref. email, 31/1/2012)

1.5 Agenda

Programme

0930 hrs - 1000 hrs	:	Registration
1000 hrs - 1010 hrs	:	Official opening
1010 hrs - 1100 hrs	:	Overview of WAHARA Project – Mr. D. Moono

1100 hrs - 1130 hrs	:	Tea break
1130 hrs - 1215 hrs	:	Introduction to rain water harvesting (RWH) – Mr. A. Chomba
1215 hrs - 1300 hrs	:	Discussions
1300 hrs - 1400 hrs	:	Lunch
Close of the workshop		

1.6 Presentations

As can be seen on the programme above there were two presentations made.

- a. My presentation was based on the information contained in the 2 page fact sheet: “WAHARA- Investing In Dry land Agriculture for Growth and Resilience:. It was suitable material for introducing the project to the stakeholders on what it is and its aims.
- b. Mr. Chomba’s presentation is attached as annex 2. The aim here was to introduce to the stakeholders the vast array of WHT. As we embark on the implementation of the project, we have to decide on which are the relevant WHT to adopt and practice in the study area (including the available WHT).

2. Workshop Discussion

The floor was opened for discussion on the techniques/technologies that had been presented. Opinions/views/reactions from the participants were encouraged.

Mr. Hapeela welcomed the project as a good initiative and expressed willingness on behalf of the farmers to participate and contribute to its success.

It was noted that the Magoye river does not flow continuously during dry season therefore the need for water harvesting. The dairy farmers are affected because if there is little water, they have to go long distances to look for water sources. The longer the cows walk, the more energy lost and hence the more stressed they become. This has the effect of reducing milk production thus negatively affecting households that depend on milk production for their livelihoods. Draft animals are also affected. If they are not taken care of in the dry season, not possible to expect them to perform well at the onset of the rains and at the period of planting.

Mr. Mainga also welcomed the project and revealed that he knows of a better way of WH but is unable to use it because of lack of resources. He has a stream running through his farm and wondered how the project could assist in ensuring that farmers are able to harvest water at their own farms.

In response, the chairman *Mr. Moono* noted that while the project on its own cannot provide funding to individual farmers, this can be done during on-farm research demonstrations at various locations. He also informed the participants that the delay to the commencement of the project was due to signing agreements and hence delays in holding the stakeholder meetings as per requirement of the donors. This meeting was initially supposed to have taken place in the dry season (May-October, 2011) . He however assured the participants that he would get details about the irrigation fund from the Zambia National farmers Union. Notwithstanding, he noted that this could be possible maybe in the future and not as at now.

It was important to adapt models from the people who have learnt about water harvesting eg. plastics etc. This was the reason why stakeholders were exposed to various ways of water harvesting at this forum.

It was noted that the Magoye catchment area is about 2,281km². This meeting was therefore important to lay the ground work so that stakeholders understand which techniques are available and can be adopted.

Mr. Hapeela further revealed that a satellite milk collection centre north of Magoye, is usually a casualty due to water shortage. Pelusa is closed during the dry season as animals are taken to Kafue Flats. He wondered whether some funding could be allocated to building this water harvesting system at that location.

The Chairman, *Mr. Moono* replied that a cost effective system could be used. At this point it was important to come up with an inventory of what techniques could be used here. He reiterated the fact that funding will not be sufficient to cater for all the farmers, but there will be some funding for demonstrations. A possibility could be to have contact farmers and conduct on farm demonstrations on what WHT can work. There are no many available techniques now because not much of rainwater harvesting has been done before, but many micro catchments have been made. The question remains – What do we think is possible to be done?

The Dairy industry is mostly affected as water for livestock is needed. This was very much emphasized. There are some dams and micro catchment areas around the study area which are not being utilized at the moment. There is need to increase their water holding capacity by expanding them.

In his contribution, *Mr. J. H. Mweemba* suggested that it was vital that policy makers were part of this stakeholders meeting because people plough around the dam and rivers causing siltation and sedimentation. People are currently planting anywhere and hence the streams are becoming shallower. Especially for dairy, water is a problem. He noted that there are too many projects in the area but not much is coming out from them and advised the Zambia National Farmers Union (ZNFU) to really come out and make their presence felt. Are concessionally loans available for their farmers?

Mrs. Nkunika representing an NGO in Lusaka observed that one of the major difficulties NGOs are facing is that farmers/community do not see themselves as a family to ensure that if something is done in a participatory way, it will work. How many people are prepared to work together? There is strength in numbers. If everyone contributes a certain amount of money, a change can be made so that by the time government moves in, some progress would have been made. The problem is that people want to be spoon fed. How then can communities help themselves to make sure these things happen? There is need for trust and cooperation in working together. People need to share as much information as possible.

She observed that there is danger of Southern province becoming like the Sahara desert. With the climate change there is need for people to take care of themselves, their land and ensure that they survive especially that there is a lot of Tonga people migrating to other provinces. It is important to leave foot prints behind for the next generation to follow.

Land tenure and weak extension service emerged as issues that needed to be attended to. Some boundaries are demarcated some are not. Some farmers work beyond their boundaries. Locating a project in particular area becomes difficult especially when people do not work together. There is need for a reversal in thinking. It was observed that jealousy people were preventing other people from participating effectively. There is need for communities to agree to continue with implementation of these programs especially with the help of policy makers and politicians.

It was noted that it would have been helpful if one of the chiefs was present to provide guidance on issues related to land tenure as the traditional rulers are the ones who can make the decisions. They are important to help in these circumstances.

It was further suggested that policy makers and traditional rulers should participate in future meetings.

The aim of this workshop was to identify the likely problems which can negatively affect the implementation of WHT. Sensitization on how can water be protected for the benefit of the people is therefore vital. It will also be necessary to the policy makers and all those concerned to bring these problems to notice of the Government.

It was agreed that a demonstration will be put up at *Mr. Mainga's farm* as he has a stream in his farm. It should be understood that the project will not be able to financially support all farmers. However the financial decision could not be made in this meeting as the people responsible were not in this meeting to decide on the use of water bodies such as dams. Communal ownership is to be strengthened and encouraged.

Mr. Muchindu revealed that there used to be water reservoirs run by windmills. Although running costs of windmills are not high, installation costs are quite substantial. In contributing to the discussion, *Mr. A. Mweemba* noted that the turn up of the first invitation was evidence to show that people were interested in water harvesting technology. He further noted that the only way programs would work is when farmers come together and reason together.

The chairman emphasized that the power of GART will be to lobby and not to get involved into the politics of land. If water is life to the individual human being, then it is also life to a community. At this time, it was important to get ideas and demonstrate these ideas through contact farmers. It is not possible to expand from the word go as it is a process. These contact farms can then be used as learning sites.

Mrs. Nkunika thanked the facilitator for the meeting, the participants for their wisdom and contributions and noted that she has learnt a lot as she is a smallholder farmer.

The chairman thanked the farmers for the good attendance and encouraged feedback particularly on how to revive techniques which have been in existence. Conservation agriculture is not the re-invention of the wheel. The hoe has been used since time immemorial, now people are just advised to put the planting pits in line. In the same vein, water harvesting may not be a new thing but is now vital to adopt techniques that will work best in the local setting.

It was advised that the next meeting would be after March, 2012 and the Deputy Mayor promised that he would convey the problems raised to the council since they are the relevant authority. He further emphasized the need for the participation of the chiefs, District Agricultural Coordinators (DACOs) and informed the gathering that those responsible to advise on issues such as land – the Director of Planning and the DACO Mazabuka would be invited to come. He expressed hope that the project would go along way in improving the lives of the people in Magoye.

The meeting closed at about 1330 hrs and the participants posed for a group photo shoot and broke for lunch.

Pictures from the meeting



Douglas Moono explaining what WAHARA is.



Arthur Chomba: Presentation on WHT



Group Photo