ToT Course on Participatory Irrigation Extension Management Skills

Training Resource Material
March 2016
Agriteam Canada Consulting Ltd.

In association with:
Training-of-Trainers (ToT) Course on Participatory Irrigation Extension Management Skills for Development of SSI and MI Schemes

Organized by:

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AMHARA NATIONAL REGIONAL STATE
BUREAU OF AGRICULTURE, BAHIR DAR, ETHIOPIA

Venue: Fenote Selam, Amhara Region
(March 14-17 2016)

Contributors:
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TRAINING RESOURCE MATERIAL
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ACRONYMS

ACC Agricultural Commercial Clusters
ADPLAC Agricultural Development Partners’ Linkage Advisory Councils
ARARI Amhara Regional Agricultural Research Institute
ARDU Arsi Rural Development Unit
ATA Agricultural Transformation Agency
A-TVETs Agricultural Technical Vocational and Educational Training
BoA Bureau of Agriculture
CADU Chilalo Agricultural Development Unit
CPP Comprehensive Package Program
DA Development Agent
EPID Extension and Project Implementation Department
FTC Farmer Training Centre
FINA Farmer Information Needs Assessment
HLI Higher Learning Institutions
IADP Integrated Agriculture Development Program
IAR Institute of Agricultural Research
ICT Information, Communication and Technology
IDA Irrigation Development Agent
JES Job-Embedded-Support
KAP Knowledge, Attitude and Practice
MI Micro-Irrigation
MLE Monitoring, Learning and Evaluation
MoA Ministry of Agriculture
MoANR Ministry of Agriculture and Natural Resources
MPP Minimum Package Programs
NGO Non-Governmental Organization
OIDA Oromia Irrigation Development Authority
ORARI Oromia Regional Agricultural Research Institute
PADEP Peasant Agricultural Development and Extension Project
PRA Participatory Rural Appraisal
PTD Participatory Technology Development
RIXE Regional Irrigation Extension Expert
SARI SNNPR Regional Agricultural Research Institute
SMIS Small and Micro Irrigation Support
SNNPR Southern Nations, Nationalities and People’s Region
SSI Small-Scale Irrigation
TARI Tigray Regional Agricultural Research Institute
T&V Training and Visit System
ToT Training-of-Trainers
WIECC Woreda Irrigation Extension Coordination Committee
WUO Water User Organizations
ZIEPC Zonal irrigation extension planning committee
1 INTRODUCTION, OBJECTIVES AND LEARNING OUTCOMES

Introduction
The training course on “Participatory Irrigation Extension Management Skills for Development of small-scale irrigation (SSI) and micro-irrigation (MI) schemes” has been prepared based on the recommendations accentuated in the Capacity Needs Assessment report, prepared by the Small and Micro Irrigation Support (SMIS) project in cooperation with the regional Bureaus of Agriculture (BoA). The proposed training will enable selected-participants gain skills on impetus of irrigation extension for effective SSI and MI development.

The training-of-trainers (ToT) course has relevance to the Regional Growth and Transformation Plan II. That region is emphasizing on the adoption of improved irrigation practices in SSI and MI schemes using participatory irrigation extension approaches. The course intends to strengthen the capacity of selected-participants who are persuading farmers on improved irrigation practices by which they will be able to cascade it to the farmers through training to zones, woredas and development agents (DAs).

Objectives of the Training
The objectives of the training are:

- To increase the knowledge and skills of irrigation extension experts on participatory irrigation extension approaches thus making them responsible to efficiently guide woreda and DAs to promote adoption of improved SSI and MI technologies.
- To increase the capacity of irrigation extension experts training skills to learn the art of training in irrigation extension by which they cascade the training skills to zones, woredas and DAs through job-embedded-support (JES).

Trainer/facilitator Goals
The general objectives or goals of a trainer or facilitator are:

- Help participants get to know each other and share their experiences among them
- Identify what participants want to get out of the training
- Facilitate discussion of how they perceive their own role, and the roles of others
- Increase participants’ understanding of basic communication skills in each respective thematic area
- Transfer new ideas and practices

Overall learning outcomes
Participants will be able to:

- Express their training needs in regards to the training topic
- Describe their current role in the area of the training program
- Better understand the roles others play in the area of the training program
- Understand now what they had been lacking
- Know now what to do next
- Use new communication tool(s).
2 SMIS PROJECT – AT A GLANCE

The SMIS project is envisioned as a capacity development initiative and is designed to support government organizations, private institutions, water user organizations (WUOs) and farmers to develop sustainable SSI schemes. The SMIS project has three components aimed at supporting:

(i) Small-Scale Irrigation  
(ii) Agricultural Technical Vocational and Educational Training (A-TVET) Colleges  
(iii) Micro (or Household) Irrigation.

Enhancing capacities to apply water efficiently as well as to apply technologies and improvements in the value chain for the supply of inputs and in the marketing of produce will not only increase yields and quality of produce, but provide the farmers and communities with necessary incentives to adopt irrigation.

This comprehensive approach to water use for agriculture brings together the government sector at all levels, educational institutions, users (male and female farmers) and the private sector that supplies them and purchase their produce.

Within this context, the SMIS is designed to support the Ministry of Agriculture (MoA) and regional partners in their efforts to achieve gender equitable and environmentally sustainable development of SSI and micro irrigation schemes in an integrated watershed-based and participatory manner that enhance irrigated agricultural productivity and food security for smallholder farmers.

Goal:
To contribute to increased food security and agricultural growth together with better access to more nutritious food through sustainable development of SSI and MI.

Development Objectives:
To ensure that all concerned public and private institutions within each of the four regions have the necessary capacity required for gender-responsive identification, planning design, construction and management of sustainable SSI and MI schemes in a coordinated manner and in accordance with the adopted integrated watershed-based approach.

Outputs:

1. Improved planning, design and construction of gender equitable and sustainable small-scale and micro irrigation scheme by public and private institutions,
2. Improved management of gender equitable and sustainable small-scaled and micro irrigation schemes by WUOs and individual users respectively, with support from key public institutions,
3. Improved water, soil and crop management practices for irrigated crops adopted by (male and female) farmers.
3 TRAINING OF TRAINERS (ToT) COURSE PROGRAMME/AGENDA

Organized by: BoA, Amhara Region

1. Training Venues:
   - Conference /Training room, Damot Hotel in Fenote Selam zone (14 to 15 March 2016)
   - Practical exercises: Leza SSI scheme in Jabi woreda, and Jigna MI scheme in Dera woreda on 16-March 2016
   - Conference/ Training room, Brand Hotel in Woreta woreda on 17 March 2016

2. Course Coordinator:
   BoA Amhara Region, Deputy Extension Process Owner

3. Facilitators:
   - Melaku Tefera, Regional Irrigation Extension Expert (RIXE) of SMIS Amhara region (mobile 091 876 1399)
   - Dr Duressa Chibsa, RIXE of SMIS Southern Nations, Nationalities and People’s Region (SNNPR) (mobile 091 686 3726)
   - Tatek Gebreab, RIXE of SMIS Oromia region (mobile 093 007 2572)
   - Abadi Haileselassie, RIXE of Tigray region (mobile 091 473 5466)

4. Training Support Service:
   Kindu Kinfe, Finance and Admin Manager, SMIS Amhara (mobile 091 872 0416)

5. Participants: Total 20
   - 4-Extension Process Owners of regional partner institutions (e.g., BoA in Amhara, Tigray, SNNPR and Oromia Irrigation Development Authority (OIDA) in Oromia
   - 4-Extension Process Owners of regional partner institutions (e.g., BoA in Amhara, Tigray, SNNPR and OIDA in Oromia
   - 4-Extension Process Owners of regional partner institutions (e.g., BoA in Amhara, Tigray, SNNPR and OIDA in Oromia
   - 4-Regional Socio-Economic Extension Research Expert of ARARI, TARI, SARI and OARI
   - 4-Regional Irrigation-Extension Experts of SMIS of Amhara, Oromia, Tigray and SNNPR

3. **TOT Course Programme/Agenda**

Day 1: Monday 14 March 2016

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<tr>
<th>Time</th>
<th>Topics</th>
<th>Resource Facilitator/Trainer</th>
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<tbody>
<tr>
<td>08:30 – 08:45</td>
<td>Registration</td>
<td>Administrative Assistant, SMIS</td>
</tr>
<tr>
<td>08:45 – 08:55</td>
<td>Trainees take their seats</td>
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<tr>
<td><strong>Inaugural session</strong></td>
<td></td>
<td></td>
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<tr>
<td>09:00 – 09:10</td>
<td>Welcome Address</td>
<td>1. Bureau Head, Amhara region</td>
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<tr>
<td></td>
<td></td>
<td>2. Mamaru Tsidku, RTL/SMIS</td>
</tr>
<tr>
<td>09:10 – 09:20</td>
<td>Training objectives and outputs</td>
<td>Course Coordinator, BoA Amhara</td>
</tr>
<tr>
<td>09:20 – 10:30</td>
<td>Trainee’s credentials, expectation from course, group formation</td>
<td>Melaku/Sajjad Noor, SMIS</td>
</tr>
<tr>
<td>10:30 – 10:45</td>
<td>Tea/Coffee break</td>
<td></td>
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<tr>
<td><strong>Training session</strong></td>
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<td></td>
</tr>
<tr>
<td>10:45 – 12:45</td>
<td><strong>Module 1: Extension philosophy and leadership development in irrigation extension</strong> (includes group work)</td>
<td>Sajjad Noor, Irrigation Extension Addisor, SMIS</td>
</tr>
<tr>
<td>12:45 – 14:00</td>
<td>Lunch break</td>
<td></td>
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<tr>
<td>14:00 – 15:00</td>
<td><strong>Module 2: Functioning value chains and innovation platforms through Agricultural Commercial Clusters (ACC) approach</strong> (includes group discussion)</td>
<td>Dr. Getachew Alemayehu Associate Professor of Extension and Research, Bahir Dar University</td>
</tr>
<tr>
<td>15:00 – 16:00</td>
<td><strong>Module 3: Selecting effective irrigation extension communication methods for SSI and MI farmers</strong></td>
<td>Dr Duressa Chibsa, RIXE, SMIS/SNNPR</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Tea/Coffee break</td>
<td></td>
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<tr>
<td>16:15 – 17:00</td>
<td>Group work and discussion</td>
<td>Duressa/Sajjad</td>
</tr>
<tr>
<td>17:00 – 17:15</td>
<td>General discussions/evaluation of the day training</td>
<td>Course Coordinator/Facilitator</td>
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Day 2: Tuesday 15 March 2016

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<tbody>
<tr>
<td>08:30 – 0930</td>
<td><strong>Module 4: Participatory irrigation extension planning at the woreda level, planning steps and procedures</strong></td>
<td>Sajjad Noor, SMIS</td>
</tr>
<tr>
<td>09:30 – 10:30</td>
<td>Continued group work, discussion and presentation</td>
<td>SMIS RIXEs and Sajjad</td>
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<tr>
<td>10:30 – 10:45</td>
<td>Tea/Coffee break</td>
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<tr>
<td>10:45 – 12:45</td>
<td><strong>Module 5: Planning, organizing and conducting on-farm irrigation demonstrations with focus on participatory technology development (PTD) by farmers</strong></td>
<td>Melaku Tefera, RIXE, SMIS/Amhara</td>
</tr>
<tr>
<td>12:45 – 14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>14:00 – 15:00</td>
<td><strong>Module 6: Methodology of identifying and promoting irrigation extension best practices in the schemes</strong></td>
<td>Getachew Alemayehu, PhD Associate Prof of Extension and Research, Bahir Dar University</td>
</tr>
<tr>
<td>15:00 – 16:00</td>
<td><strong>Module 7: Techniques of identifying training needs assessment of SSI and MI farmers</strong> (includes discussion)</td>
<td>Sajjad Noor, SMIS</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Tea/Coffee break</td>
<td></td>
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<tr>
<td>16:15 – 1700</td>
<td><strong>Module 8: Preparing simple and illustrative training lesson</strong></td>
<td>Sajjad Noor, SMIS/ Tatek</td>
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### TOT Course Programme/Agenda

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<tbody>
<tr>
<td>17:00 – 17:15</td>
<td>General discussion and preparation of field visits for practical exercise/evaluation of the day training</td>
<td>Course Coordinator/Facilitators</td>
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#### Day 3: Wednesday 16 March 2016 (Practical Sessions)

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<th>Resource Facilitator</th>
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| 08:00 – 11:00  | **Practical work in SSI and MI schemes**  
Field Visit to SSI scheme in Fenote Selam to interact with irrigated farmers.  
**On-farm demonstration (1 hour)**  
View and discuss practical applications of irrigation extension for farmers  
- View and discuss on-farm irrigation systems  
- Discuss crop selection and crop rotation choices made by farmers  
- Demonstration of crop seeding, transplanting, and fertilizer management  
- On-Farm Water Management - How do farmers decide when to irrigate.  
- Marketing options for farmers  
**Extension Topics (1-hour)**  
- Select the farmers on random basis  
- Use the format of TNA  
- Conduct training needs assessment of farmers based on class discussion | Melaku with Duressa, Abadi, Tatek  
Melaku, Duressa, Abadi, Tatek with Sajjad |
| 11:00 – 15:30  | Travel to Dera woreda – brief stopover in Dingla for lunch              | Admin/SMIS                                   |
| 15:30 – 17:00  | **Field visit to MI scheme in Dera to interact with MI farmers**  
View and discuss practical applications of irrigation extension for MI farmers  
- Discuss crop selection made by farmers.  
- Demonstration of crop seeding, transplanting, and fertilizer management  
- On-Farm Water Management - How do farmers decide when to irrigate using micro-irrigation devices  
- Marketing options for farmers  
- Learn about suitable irrigation extension approaches on adoption of MI technologies |                                       |

Overnight in Woreta woreda
### Day 4: Thursday 17 March 2016

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<tr>
<td>08:30 -10:30</td>
<td>Group work preparation of training need analysis and developing training lesson plans</td>
<td>Sajjad Noor, SMIS/ Melaku</td>
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<tr>
<td>1030-10:45</td>
<td>Tea/Coffee break</td>
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<tr>
<td>10:45 – 11:45</td>
<td>Group Presentation on TNA and training lesson sheets</td>
<td>Sajjad Noor, SMIS</td>
</tr>
<tr>
<td>11:45 – 12:30</td>
<td><strong>Action Plan:</strong> Preparation of a <em>Learning Paper</em> on the outcome of training course that includes lessons learned, skills and knowledge gained and a Way Forward (Action Plan) prepared by trainees and finalize the training course materials to cascade ToT course for SMIS-supported zones and woredas (trainees will deliver slide presentation)</td>
<td>Course Coordinator SMIS RIXEs</td>
</tr>
<tr>
<td>12:30 – 14:00</td>
<td>Lunch break</td>
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<tr>
<td>14:00 – 15:00</td>
<td>Continue Action Planning and group presentation</td>
<td>BoA/RIXEs of SMIS</td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td><strong>Training evaluation by the participants</strong></td>
<td>Coordinator, BoA Facilitators</td>
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**Closing Session**

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<th>Resource Facilitator/Trainers</th>
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</thead>
<tbody>
<tr>
<td>15:30 – 15:45</td>
<td>General discussion on overall training course</td>
<td>Course Coordinator/ Facilitators</td>
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<tr>
<td>15:45 – 16:00</td>
<td>Concluding remarks and presentation of certificates</td>
<td>BoA Amhara /SMIS</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Tea/Coffee break</td>
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**Closing Session**

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Resource Facilitator/Trainers</th>
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<tbody>
<tr>
<td>16:30 – 17:15</td>
<td>Participants travel to Bahir Dar and overnight stay in Bahir Dar</td>
<td>Admin of SMIS Amhara</td>
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4 MODULE 1: EXTENSION PHILOSOPHY AND LEADERSHIP DEVELOPMENT IN IRRIGATION EXTENSION

Module Outline

1. Objectives of the module
2. Introduction and justification
3. The key elements of extension philosophy in irrigated agriculture
4. Past agricultural extension service in Ethiopia - an experience in delivery system
5. Purposes and philosophies of extension irrigated agriculture
6. Principles of learning
7. Leadership in irrigation extension
8. Small group work/test on the philosophical foundations of irrigation extension

1. Objective of the Module
By the end of this module, participants will be able to:

- Realize the philosophical ideals of extension in respect of broader understanding of farmers’ perception, attitude and behavior toward adoption of improved irrigation technologies.
- Understand the objective of key guiding principles of extension philosophy while building congenial relationships with the farmers and farming communities in SSI and MI schemes.
- Know the learning techniques on leadership to help guide the DAs, woredas and zones on applying participatory irrigation extension approaches to establish mechanisms for farmers to influence and share control over SSI and MI development initiatives and resource decisions that affect them.
- Know their specific roles and functions in transferring irrigation technologies.

2. Introduction and Justification
The philosophy of extension education in agriculture, and particularly in irrigation is important for exploring many of the philosophical questions that arise in informal learning settings with farmers. Here the role of an extension leader (extension experts, managers or DAs) is crucial in understanding of farmers’ perception, attitude and behavior toward adoption of improved irrigation technologies. This is more important for small-scale and micro-irrigation schemes to the extent that SMIS-targeted four regions (Amhara, Tigray, Oromia and SNNPR) significantly focuses on improving the capacity of extension services in irrigated agriculture to enable delivery of required irrigation-extension services in a more effective and efficient manner. This included improving on-farm water and crop management practices and improving farmers’ skill in operation and maintenance of irrigation schemes. Therefore, in all cases broad understanding about extension philosophical ideas including gender sensitivity and environmental integration puts emphasis on planning irrigation extension activities with the scheme farmers. Moreover, the philosophical ideas and the learning techniques on leadership help guide the extension managers on appropriately applying participatory irrigation extension approaches to establish mechanisms for farmers to influence and share control over irrigation development initiatives and resource decisions that affect them.
4. **Module 1: Extension Philosophy and Leadership Development**

3. **Key Elements of Extension Philosophy**
The Extension philosophy is an expression of the ideals (principles), purposes and aims of participatory irrigation extension. It serves to inspire and guide the extension workers, importantly the frontline development agents (DAs) who are engaged in the work of irrigation-extension services for SSI and MI scheme farmers. This resource material tells us on key guiding principles of extension philosophy while building congenial relationships with the farmers and farming communities.

**The Basic Principles of Extension’s Philosophy**
- An extension expert, worker, or agent is a facilitator
- Participatory extension is an educational service.
- Extension work is based on the needs and interests of farmers it serves
- Extension’s educational efforts are directed to all classes of farming communities
- Extension work is conducted democratically
- Extension programs are developed with the farmers – not for them
- The development of farmers is the ultimate objective of participatory extension

**Extension’s Values**
- Ethical work
- Honesty
- Participatory concept
- Change and problem-solving
- Extension of knowledge to the farmers
- Excellence in programming with continuous improvement through technology, communication and training

**Extension’s Vision**
- Is providing technical support to agriculture and farmers
- Is taking the lead to help farmers become healthier, more productive, financially sound and environmentally responsible
- Is educating farmers with timely, accurate, comprehensive information
- Is building coalitions to address issues facing farm communities, families and youth
- Is earning a reputation for integrity and respecting all people

**Extension’s Beliefs**
Extension education has the important general purpose to discover and present to the farmer the opportunity to advance as a maturing individual. This philosophy points toward the use of extension education for the development of free, creative, and responsible persons in order to advance the human maturation thus influencing the community development. The philosophy of extension education is based on the belief that:

1. Farmer behavior can be changed to some extent.
2. Extension education should be designed to help farmers grow and mature.
3. Farmers must be offered and helped to use the opportunity to act responsibly in several facets of their lives: political, vocational, cultural, spiritual, and physical.
4. Farmers should assume the obligation to learn to become more productive farmers.
5. Farmers have untapped resources of creative potential that should be utilized.
6. Every conscious adult farmer can learn.
7. All farmers can be helped to make better use of their intellectual capacity.
8. Farmers need to live together in a community to grow and mature, and they need to learn how to do this.
9. All farmers should find some way to express themselves constructively and creatively.
10. Traditional teaching procedures and learning facilities are often inadequate.
11. An understanding of freedom, discipline, and responsibility promotes the discovery and productive use of farmer talents.
12. Such vital concepts as freedom, discipline, and responsibility can be comprehended by experiencing them through a variety of inspired learning experiences in a host of subjects.
14. Each farmer participating in a learning experience should have the opportunity to help diagnose, plan, conduct, and evaluate that experience along with his/her fellow learning farmers and other clientele.
15. Many farmers associate education with a school, informally or formally. Education can take place at home, in church, on a farm and on FTC.
16. Farmer behavior is conditioned by feelings and emotions as well as by reason and rational judgment.
17. Every farmer seeks fulfillment or happiness.
18. Extension education can help condition farmers to live in a community and at the same time sensitize them to ways in which that community can be improved.
19. Extension staff offers to work with farmers to help them become healthier, more productive, financially sound and environmentally responsible.
20. Farmer families and farming communities depend on each other.

The seriousness and thoroughness of extension worker/agent is governed by the premise of the extension concept – the philosophy of extension. The philosophy states:

1. “Start where people are”, this means studying the farmers through visits and surveys in order to identify their level of farming knowledge, their communication skills, their attitudes, their social cultural system, way of life, problems and felt needs.
2. “With what they have”. Such as farm tools and any other capital available.
3. “Help them help themselves”, this means training/ or facilitating farmers how to do better farming using their own efforts and resources following the principles of extension. The principles of extension are stated as follows:
   - That extension should not be forced on the farmer
   - That extension should not be form of charity
   - That rural people should participate in every effort intended to improve their way of life
   - That the extension workers/agents should utilize the local leadership
   - That the extension workers/agents should study the job thoroughly.

Now that we have seen what extension philosophical ideas are, let us review its application in the past, recent past and current extension service in Ethiopia.
4. Past Agricultural Extension Service in Ethiopia

During the past few decades, Ethiopia has moved from the Imperial government with a feudalistic economy, to a Marxist Military regime that promoted socialist economy, before finally moving to Ethnic Based Federal system advocating for decentralization and market economy. The following sections review the development of agricultural extension in Ethiopia in the context of philosophical changes:

The Imperial Era (continued thru 1974)

The following are the important events that happened during this era:

- From available information federal government promoted agricultural development from 1890.
- The innovations that were promoted included farming practices, rubber tree, eucalyptus tree and improved irrigation system.
- The establishment of ministries in 1900 EC by Emperor Menilik marked the beginning of major efforts by the state to modernize the agriculture sector.
- Rewarding systems for adopting better livestock and crop management practices were institutionalized through legal notices (1910-1930).
- In 1931 the government of Haile Selassie-I drafted a constitution that established 11 ministries including agriculture ministry.
- Due to Italian occupation during mid 1930s caused disruption in the government system;
- Until 1943, the MoA was vested with the responsibility of all agricultural matters, and some demonstration farms were established.
- After the early 1950s the formal extension system began conducting large scale activities in promoting traditional agriculture.
- There were no coordinated activities of technology transfer during the pre-1953 period.
- Although formal extension system was in place, but was not well defined extension system with defined extension objectives, targets, extension contents and communication methods.
- In 1953, Alemaya College of Agriculture was created to lead agricultural education, research and extension.
- In October 1963, the Ethiopian constitution was revised and approved. The major responsibility was given to the MoA to become the sole extension service provider in the country.
- The agricultural ministry implemented lot of projects such as Comprehensive Package Program (CPP), Chilalo Agricultural Development Unit (CADU), Arsi Rural Development Unit (ARDU), Minimum Package Programs (MPP) with major donor funding.
- The extension-research linkage was initiated in 1974 by both Institute of Agricultural Research (IAR) and Extension and Project Implementation Department (EPID) under a program known as outreach program that lasted only up to 1977.
- In sum, the extension system during the imperial era had limited coverage, and its clients were mainly the better off, only the commercial farmers.

The Era of Marxist Regime (1975 – 1991)

The following are the important events that happened during this era:

The land reform proclamation was issued on March 4, 1975.
This proclamation abolished private-ownership of land, prohibited transfer of land by sale, exchange of mortgage, and limited the maximum farm size of a farmer at not more than 10 ha.
The MoA took a move on implementation of rapid dissemination of technologies by breaking down general extension undertakings into crop, animal, forestry, and soil and water conservation departments.
This move was resulted in the fragmentation of efforts, lack of integration, multiple chain of command and proliferation of administrative staff, and bureaucratization.
MPP has not had a significant impact on the agricultural sector as the government failed to reform the land tenure system.
The government passed a legislation to organize smallholder farmers into cooperatives;
In 1981, model farmer approach was replaced by Producers’ Cooperative Approach.
1986, The Peasant Agricultural Development and Extension Project (PADEP) was introduced that employed a modified training and visit (T&V) system.
The modified T&V system had clear line of command, and was able to build accountability into the system.
National agricultural research and extension systems were strengthened.
The clients of extension became the smallholders after 1974 land reform.
Involving clients of extension in the planning process remain unchanged and the farmers were treated as passive recipients of innovations.

Era of Decentralization (The Post 1991 Period)
The following are the important events that happened during this era:
The era of institutional pluralism in the history of extension in Ethiopia after 1990;
The beginning of involvement of farmers and non-governmental organizations (NGOs), particularly FARM Africa, SOS Sahel, and Agri-Service Ethiopia in the extension and on-farm research processes;
The modified T&V system continued as the national extension system in the early 1990s;
PADETES emphasized on better research-extension linkage, encouraged aggressive work in technology transfer to smallholders, and made efforts to strengthen the extension system;
Access to inputs were improved by providing credit in kind when farmers could present delivery order to the supplier;
Extension programs were formulated without considering farmers’ needs and capabilities;
DAs physical capacity to monitor up to 300 farmers was major reason for limitations in the acceptance of technologies by some farmers;
The extremely severe drought of 2002-2003 forced the government to focus on water harvesting activities;
The post 1991 period also marked the devolution of power from central to regional govts;
Regional BoA became responsible to plan and implement agriculture extension;
There has not been a well-defined agricultural extension policy and implementation strategy;
Extension projects have nearly always been top down, heavily influenced by donor agencies;
5. Purposes and Philosophies of Extension in Irrigation Extension

Purposes of Extension Education:

Purposes are the basic reasons for conducting extension education that are translated into practices. In some cases, purposes are derived from ideals, to help farmers achieve their true potential, for example, improving their livelihood and economic returns. As discussed above, philosophies are the beliefs about the way in which extension education is conducted and the general principles that guide practice. The basic purposes of extension education are in four major categories. The success or failure in achieving one affects all others.

To Facilitate Change in a Dynamic Farming Community

This is creating awareness among the farmers about rapid change and increasing knowledge and skills for them. It has two dimensions, one social, and the other material. On the social dimension, as values, attitudes, and beliefs changes, so do social role expectations changes with the behavior of adult farmers. Rapid change in a material sense pertains to the rapid change in knowledge and skills of the farmers. This is due to the fact of facilitating farmers in performing specialized task on participatory technology trials or innovations—changes so rapid that farmers quickly follow the adoption process by which diffusion takes place in the farming community.

To Support and Maintain the Good Social Order

In order to support and maintain the good social order, it is important to build groups within the communities that identify common problems and that participate together in solving them. The themes of enlightening the farmers, participation, and community are central to the notion of the good democratic order. For a community to be democratic, all members, the farmers, should have an equal chance for socioeconomic success. Hence, the conditions that produce unequal opportunity, such as prejudice and unequal access to resources, should be eliminated.

To Promote Productivity

The main purpose is to promote farming productivity of the farmers. This is done by conducting informal education and training to the farmers in various ways, such as in the home, church, on-farm and through demonstration. This encourages the farmers in the adoption of the technology. Most important for the farmers is the adult literacy programs and efficient communication system by which farmer can accumulate knowledge to transmit it to the others.

To Enhance Personal Growth

The personal growth of the farmer is geared toward promoting programs on at least three levels—the relational level, on the self-actualization level, and on the enrichment level. Relationally oriented programs assist the farmer to develop more effective relationships with others—family, co-farmers and so on. This type programs includes, for example, leadership training, sensitivity training, and family effectiveness training. Self-actualization programs attempt to help farmers to understand their own potentials and to actualize them. Women’s reentry programs are an example. Finally, enrichment programs assist farmers in making creative use of leisure time such as in FTC’s club.

Philosophy of Extension Education

As the field of extension education thrives, the farmers, the leaders and also the thinkers develop theoretical and philosophical statements regarding practice in the particular field. The farmers here
are more related to their farming activities and practices on their farmlands and they document the practices for records and further scaling up in which change occur in the farming community. There are five prevailing philosophies in extension education that guides the extension educator in understanding of its application relevance to the local need of farmer, its environment and the social aspects of the community. These are:

1. Liberal (Classical or Traditional) Education for intellectual development
2. Progressive (education for practical problem solving)
3. Behaviorist (education for behavioral change)
4. Humanistic (education for self-actualization)
5. Radical (Reconstructions) education for major social change

1. Liberal Extension Education
Liberal extension education has its historical origins in the philosophical theories of the classical Greek philosophers, Socrates, Plato, and Aristotle. This liberal education tradition was adopted and adapted in the Christian schools in early, medieval and modern times. It became the predominant theory in the western world and is still a strong force in educational thought today. The emphasis is this tradition is upon liberal learning, organized knowledge, and the development of the intellectual powers of mind.

2. Progressive Extension Education
Progressive education has its historical origins in the progressive movements in politics, social change, and education. This approach to extension educational philosophy emphasizes such concepts as the relationship between education and society, experience-centered education, vocational education, and democratic education.

3. Behaviorist Extension Education
Behaviorist education has its roots in modern philosophic and scientific movements. Behaviorism in adult education emphasizes such concepts as control, behavioral modification, learning through reinforcement and management by objectives. Various extension education practices are inspired by this philosophic view: programmed learning, behavioral objectives, and competency-based teacher education.

4. Humanistic Extension Education
Humanistic education is related in its development to existential philosophy and humanistic psychology. They key concepts that are emphasized in this approach are freedom and autonomy, trust, active cooperation and participation, and self-directed learning. There are numerous extension education practices connected with this philosophical approach: group dynamics, group relations training, group processes, sensitivity workshops, encounter groups, and self-directed learning.

5. Radical Extension Education
Radical education has its historical roots in the various radical movements that have emerged in the past three centuries: anarchism, Marxism, socialism, and left wing Freudianism. The radicals in education propose education as a force for achieving radical social change. Education in this viewpoint is closely connected with social, political and economic understanding of cultures, and with the development of methods to bring people to an awareness of responsible social action.
Below, are three tables that compare five kinds of extension educational philosophies (Liberal, Behaviorist, Progressive, Humanistic, and Radical):

**Table 1** includes Information on the purpose of each philosophy and the roles of learners and teachers.

**Table 2** includes Information on what source(s) the philosophy derives its authority from, key words and concepts associated with each philosophy, and the methods commonly used for each.

**Table 3** includes People and practices that are often associated with each philosophy and a general time-frame for each philosophy which states when each movement began.

These tables does not provide with everything that is require to know about educational philosophy, but they do allow to see a lot of stuff at once in order to compare and contrast these ideas.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Extension Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberal</strong></td>
<td><strong>Behaviorist</strong></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>To develop intellectual powers of the mind; to make a person literate in the broadest sense--intelligently, morally, and spiritually.</td>
</tr>
<tr>
<td><strong>Learner</strong></td>
<td>&quot;Renaissance person&quot;; cultured, always a learner; seeks knowledge rather than just information; conceptual; theoretical understanding.</td>
</tr>
<tr>
<td><strong>Teacher</strong></td>
<td>The &quot;expert&quot;; transmitter of knowledge; authoritative; clearly directs learning process.</td>
</tr>
</tbody>
</table>
### 4. Module 1: Extension Philosophy and Leadership Development

#### Table 2

<table>
<thead>
<tr>
<th>Source of Authority</th>
<th>Extension Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberal</strong></td>
<td>The Western canon</td>
</tr>
<tr>
<td><strong>Behaviorist</strong></td>
<td>The environment</td>
</tr>
<tr>
<td><strong>Progressive</strong></td>
<td>Situations that learner finds him/herself in; culture</td>
</tr>
<tr>
<td><strong>Humanistic</strong></td>
<td>The self/learner</td>
</tr>
<tr>
<td><strong>Radical</strong></td>
<td>Socioeconomic and sociopolitical imbalances</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Words/Concepts</th>
<th>Liberal learning, learning for its own sake; rational, intellectual education, general education; traditional knowledge; classical/ rational humanism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberal</strong></td>
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</tr>
<tr>
<td><strong>Behaviorist</strong></td>
<td>Stimulus-response; behavior modification; competency-based; mastery learning; behavioral objectives; trial and error; skill training; feedback; reinforcement</td>
</tr>
<tr>
<td><strong>Progressive</strong></td>
<td>Problem-solving; experience-based education; democracy; lifelong learning; pragmatic knowledge; needs assessment; social responsibility</td>
</tr>
<tr>
<td><strong>Humanistic</strong></td>
<td>Experiential learning; freedom; feelings; individuality; self-directedness; interactive; openness; cooperation; authenticity; ambiguity; related to existentialism</td>
</tr>
<tr>
<td><strong>Radical</strong></td>
<td>Consciousness-raising; praxis; noncompulsory learning; autonomy; critical thinking; social action; de-institutionalization; literacy training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methods</th>
<th>Dialectic; lecture; study groups; contemplation; critical reading and discussion.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberal</strong></td>
<td>Liberal learning, learning for its own sake; rational, intellectual education, general education; traditional knowledge; classical/ rational humanism</td>
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</tbody>
</table>

#### Table 3

<table>
<thead>
<tr>
<th>People/Practices</th>
<th>Extension Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberal</strong></td>
<td>Socrates, Plato, Aristotle, Aquinas</td>
</tr>
<tr>
<td><strong>Behaviorist</strong></td>
<td>Skinner, Thorndike, Watson, Tyler, APL (Adult Performance Level); competency-based teacher education; behavior modification programs</td>
</tr>
<tr>
<td><strong>Progressive</strong></td>
<td>Spencer, Pestalozzi, Dewey, Bergevin, Sheats, Benne, Lindeman, Blakely, community schools; cooperative extension schools; schools without walls, Participation Training</td>
</tr>
<tr>
<td><strong>Humanistic</strong></td>
<td>Erasmus, Rousseau, Rogers, Maslow, Knowles, May, Tough, McKenzie; encounter groups; group dynamics; self-directed learning projects; human relations training; Esalen Institute</td>
</tr>
<tr>
<td><strong>Radical</strong></td>
<td>Brameld, Holt, Kozol, Reich, Neill, Freire, Goodman, Illich, Ohliger, Freedom Schools; Summerhill, Freire’s literacy training; free schools</td>
</tr>
<tr>
<td><strong>Time Frame</strong></td>
<td>Oldest philosophy of education in West. Roots in the Classical Period of ancient Greece</td>
</tr>
<tr>
<td><strong>Origins</strong></td>
<td>Founded by John B. Watson in 1920s</td>
</tr>
<tr>
<td><strong>Classical</strong></td>
<td>Origins can be traced to 16th c. Europe. Based on empiricism and pragmatism (1870s U.S.). Began as a serious movement in U.S. in early 1900s with Dewey</td>
</tr>
<tr>
<td><strong>Modern</strong></td>
<td>Roots go back to classical China, Greece, and Rome, but became a movement as we know it in U.S. in 1950s-60s through work by Maslow and Rogers</td>
</tr>
<tr>
<td><strong>Origins</strong></td>
<td>Origins are found in the 18th c. anarchist tradition, Marxist thought, and the Freudian Left. Modern movement began in early 1960s in Brazil with Freire</td>
</tr>
</tbody>
</table>
6. Principles of Learning

Individual farmers concern extension education with voluntary participation, so programs must be competent, reliable and attractive. Use of these six principles of learning can increase relevance to learning farmers:

**Learning and Practice:** The education must be experience centered; that is, it must focus on what the learner (farmer), not the educator (extension staff), does. Likewise, learners must be able to make use of the experiences and practice or put into action the behavior suggested by the experience.

**Feedback:** Learners should get reinforcement (feedback) to help them evaluate their own success in reaching the goal. Success in reaching goals is motivational.

**Need to Learn:** A problem-centered situation helps motivate participants to seek solutions or better understand a need to learn. The goals of the educational opportunity must be consistent with participants’ goals.

**Learners Involved:** Learners should be involved in planning and implementing learning experiences. If the goals of the learning opportunity are to relate to the needs and problems of the learners, then the search for solutions will be undertaken with the learners. In the process, the learner will be able to influence the goals and learn the process of problem solving.

**Previous Experiences:** The learning experience must relate to previous experiences of participants. When new information is related to what participants already know and are aware of, they can build on those experiences. Participants must also be capable of taking part and having the necessary resources to build on the experiences.

**Environment for Learning:** Physical comfort, mutual trust, freedom of expression and acceptance of differences are all critical to create a setting where learning is free to occur.

**Learning Activities**

A program is not a single event - it is a series of planned learning experiences designed to bring about changed behavior of participants over time. Attention to several factors will improve the possibility of that change: *Learning experiences and events are sequential; each builds upon the previous one and, in turn, leads to the next. The learning experiences are planned to accommodate the various stages of awareness, readiness, knowledge levels and learning styles of clientele, and preferred methods.* Having opportunity to learn and acquire new information/experience means that the activity is presented in various ways [hearing, seeing, doing, and repeated for feedback and practice]. Considering an appropriate sequence, the learners and learning styles increases the effectiveness of the activity.

**Learning Styles**

Learning style refers to an individual learner’s general way of taking in information, thinking, decision making, and retaining knowledge. Knowing the prevailing perceptual learning style of a target audience is useful to the Extension educator in selecting promotional and teaching techniques and in designing the overall learning experience. There are seven learning styles:

1. **Print:** People who are print-oriented often learn best through reading and writing – they love to read magazines or books and find that they easily retain information they read.
4. **MODULE 1: EXTENSION PHILOSOPHY AND LEADERSHIP DEVELOPMENT**

   ii. **Aural**: Aurally-oriented people generally learn best through listening. They usually do not talk much and feel they learn best when information is presented verbally; they may enjoy learning from audiotapes and lectures because they remember what is said.

   iii. **Interactive**: People who learn best through talking and discussing ideas with other people are interactive. Small group discussions and debates are ways through which interactive individuals learn best.

   iv. **Visual**: People who are visually-oriented learn best through observation. They like visual stimuli, such as pictures, slides, charts and posters, and demonstrations.

   v. **Haptic**: Individual farmers who learn best through the sense of touch are generally haptic learners, who have to feel or touch as many things as possible. Haptic persons assimilate information through a "hands-on" learning approach.

   vi. **Kinesthetic**: People who generally have to move around or move some part of the body while processing information are kinesthetic learners. They are in constant motion while reading or listening or doing some physical activity during a meeting.

   vii. **Olfactory**: People who learn best through the senses of smell and taste are olfactory learners. They may vividly associate some information with a particular smell or taste.

7. **Leadership Development in Irrigation Extension**

   **Concept and Meaning of Leadership**
   A leader is one who exercises influence over others. This influence helps in directing activities of others. Leadership is a group phenomenon. In any given group, there is pattern of all reactions and interaction among members. Relative strength of interpersonal relationship of the members of a group determines leadership. “According to Tend, (1998) leadership is the activity of influencing people to cooperate towards some goal which they come to find desirable”. Thus it can be said that:

   - Leadership is a matter of influencing people in the group
   - Leader is able to gain cooperation of members in achieving the goal
   - The decision of people to follow the leader is voluntary

   **Importance of Leadership in Irrigated Agriculture**
   The utilization of rural leaders is essential because of the following reasons:

   - Extension has a long tradition of using leader in extension work. Extension worker as an outsider may not have complete knowledge about different aspects of village community nor they are supposed to have similar perceptions and feelings about village problems as local people may have. Thus, there are good reasons to use such people who belong to the community.
   - Leaders by virtue of their influences can convey messages of development more convincingly in the people's language.
   - The leaders can use arguments/or reasons of persuading water-users for adoption of improved irrigation technologies in the schemes, and can help maintain social cohesion among water-user groups. Besides, the leaders can also serve as a spokesperson to explain the farming needs and aspirations of the water-users to the extension workers and to other stakeholders for seeking further extension support,
4. **Module 1: Extension Philosophy and Leadership Development**

- Number of extension workers is proportionately far less than required. Thus, use of leader can help to multiply effects of extension work conveniently and convincingly.
- Leaders can help in enlisting participation of people in programmes of their own development. It is possible to organize people around concrete problems. Leaders can use their influence and skills to bring people together and empower them to take action for their development.
- Villages in Ethiopia (particularly in irrigated agriculture scheme areas) are still haunted by deep-rooted traditional beliefs, customs, superstitious and ignorance, which influence development negatively. It calls for different types of efforts to overcome social barriers. Leaders, if positively inclined, can play prominent roles in master minding development in right earnest.

**Charismatic Extension Leaders**

Charisma comes from a combination of emotional expressiveness, self-confidence, determination and freedom from inner conflict. They have strong conviction in the essential rightness of their own convictions. They are radical, unconventional, risk taking, visionary, entrepreneurial and exemplary. There is intense emotional attachment to them on the part of their followers, which goes beyond such things as trust, respect or admiration to embrace awe, devotion and loyalty. It is most important ingredient of leadership. Extension charismatic leaders make their farmers more productive. The effective leader is the one who sees leadership as responsibility rather than privilege. They have integrity and consistency. They are usually modest; loosing no opportunity to stress that real achievement has come from teamwork and not from inspiration of just one individual. Extension leaders are very well respected and control resources of the village and those coming from outside.

Leadership in extension does make a difference to the performance of individuals, groups and organizations. It helps to build teams and generates pride in collective achievements. It brings about changes in people’s attitudes and behavior because of interaction between leaders and farmers. Leadership is widely distributed. Rural leaders are important because they are involved in maintaining traditional values in the face of challenges from those who wish to bring change in enabling groups of people to endure hardships.

It shall be not be wrong to say that it is almost impossible to have effective extension programme without involving extension leaders. They have to be involved in the programme from day one at planning stage. They are the one who will tell you how successful you will be in the programme implementation, particularly for the development of SSI and MI schemes in four regions. These extension leaders will give suggestions about how, where and what to change in the irrigation extension programmes and what role they will play in the SSI and MI schemes. It is essential extension leaders (DAs, woredas, zones and even regions) develop an instant rapport with the farmers and show the true picture to them. The good leader tends to share decision-making and share responsibility with the farmers. The good extension leader is visionary and is able to develop a shared vision with farmers and farming groups. Extension leaders help overcome obstacles and setbacks with his unique communication skills, and he talks to villagers and solves problems. This is because he is connected to the group in every possible way and empathizes to them in his unique style.
Extension leaders are important since they help their farmers to decide an important issue. They give direction for group action. They resort to group decision-making, participative decision-making and consensus decision-making. A consensus decision-making means that the leader encourages group discussion about an issue and then makes a decision that reflects general agreement, which is supported by group members.

Reference

- Semana, A.R. *Agricultural Extension Services at Crossroads: present dilemma and possible solutions for future in Uganda*, Makerere University, Uganda
5 MODULE 2: FUNCTIONING VALUE CHAINS AND INNOVATION PLATFORMS THROUGH ACC APPROACH

Module Outline

1. Objectives of the Module
2. Background and Justification
3. The Need for Functioning Value Chains and Innovation Platforms through ACC Approach
4. Systemic Bottlenecks in Promoting Functioning Value Chains and Innovation Platforms in Ethiopia
5. Key Systemic Interventions to Address the Bottlenecks
6. Members of the Value Chain Commodity Platforms and Specific Functions of the Extension Interventions
7. Small Group Works and Presentations on the Challenges and Opportunities of Value Chain Commodity Platforms

1. Objective of the Module

By the end of this module, participants will be able to:
- Realize the retrospect and present focus of agricultural research and extension in the country
- Understand the objective of functioning value chains and innovation platforms through ACC
- Analyze the main systemic bottlenecks for failing value chain extension efforts in the country
- Recognize the systemic interventions in establishing functioning value chains and innovation platforms
- Know their specific roles and functions in the value chain commodity platforms

2. Background and Justification

- To date, both the research and extension have been mainly focused on the generation and promotion of improved technologies and good practices to increase production and productivity without giving due consideration to value addition and marketing.
- On the other hand, farmers run subsistent agriculture (hand-to-mouth) and they produce largely for their household consumption.
Unless farmers get additional incomes by selling their surplus produces obtained from using improved technologies, how can they purchase and use improved technologies while improved technologies cost farmers additional expenditures.

Besides, for the purpose of household consumption, increasing production and productivity may not as such motivate farmers strongly to adopt improved technologies.

Consequently, dissemination and adoption of improved technologies by farmers is very limited.

On the other hand, increasing production does not necessarily reward farmers with better income.

For instance, a few years ago, Ethiopian farmers used hybrid maize extensively and their production increased several folds. But, they didn’t get market for their maize grain and thereby maize price dramatically reduced 2-3 times before.

Another instance, by using irrigation, Fogera farmers produce vegetables mainly onion, but they don’t have good market for their onion during peak harvest. Consequently, farmers are forced to reduce their prices markedly up to 10 times and sometimes they are forced to damp it as waste in pits for composting.

Lacking markets and marked price reduction discourage farmers not to produce more, to expand irrigation, and to adopt improved technologies.

Therefore, increasing production and productivity should be embedded in a holistic value chain that sustainably linked to markets.

3. The Need for Functioning Value Chains and Innovation Platforms through ACC Approach

Promotion of functioning value chains and innovation platforms through ACC approach is aiming at transforming subsistence smallholder farming to commercialized farming system
5. **MODULE 2: FUNCTIONING VALUE CHAINS AND INNOVATION PLATFORMS THROUGH ACC APPROACH**

through the implementation of ACC that help to enhance market-oriented extension in various geographies.

- The National Strategy for Ethiopia’s Extension System has now considered “functioning value chains and innovation platforms through ACC approach” as one of the ten cornerstones, placed at the 5th position.
- Increasing production and productivity through using improved technologies and good practices including irrigation alone doesn’t bring any impact on the development of farmers and the sector, unless the whole value chains are developed holistically.
- A value chain can be defined as the full range of activities that are required to bring a product or service from conception through different phases of production (involving a combination of physical transformation and the input of various producer services) delivery to final customers and disposal after use.
- A value chain platform brings together all key players including farmers collaborating vertically and horizontally to increase return on investment in agriculture along the production to consumption continuum.
- Value chain commodity-based and market-oriented research and extension services would also be the only way outs of enhancing the generation, dissemination and adoption of improved technologies and good practices by farmers effectively and sustainably, which in turn bring real rural transformation.

4. **Systemic Bottlenecks in Promoting Functioning Value Chains and Innovation Platforms in Ethiopia**

- The effort to link farmers to markets in Ethiopia through effective value chain development faces several bottlenecks that need to be effectively addressed.
- For instances, in Amhara Region from 2003 to 2008, with the initiation and coordination of Amhara Regional Agricultural Research (ARARI), several commodities value chain and innovation platforms were established and became functional temporarily. Some of these were the followings: (1) Bread wheat value chain platform, (2) Durum wheat value chain platform, (3) Malt barley value chain platform, (4) Rice value chain platform, (5) Potato value chain platform, (6) Soybean value chain platform, (6) Awassi and Washera cross bread sheep value chain platforms, and (7) Fogera-Holstein Frisian cross breed dairy cattle platform.
- But, except malt barley value chain platform, other commodities value chain platforms have become dysfunctional following the attrition of the initiators from the institute.
- According to the Strategy for Ethiopia’s Extension System, which has been released recently, the following five main systemic bottlenecks attribute to the failure of promoting the value chain-based extension services in the country:

1. Insufficient understanding of market-oriented production system.
2. Limited focus on strategic commodities in geography-focused ACC.
3. Low value chain implementation capacity of the extension staff.
4. Ineffective linkage among value chain actors.
5. Limited access to market information by farmers.
5. **Module 2: Functioning Value Chains and Innovation Platforms through ACC Approach**

**Bottleneck 1: Insufficient understanding of market-oriented production system**
- Market-oriented production system has its own unique activities, which need to be known and well implemented by all technical staff and other development actors at various levels for the provision of effective market-oriented extension services.
- The concept of market-oriented production system has been introduced to the Ethiopian agricultural extension system since a long time ago.
- However, its practical implementation has been challenged by the limited capacity of technical staff, unfavorable attitude of the extension staff towards market-oriented extension services, insufficient awareness on market-oriented extension services at various levels, and poor infrastructure for the provision of effective market information.

**Bottleneck 2: Limited focus on strategic commodities in geography-focused ACC**
- Although there has been a desire to change the smallholder subsistence farming to commercial farming, there have not been appropriate approaches to realize this at the grassroots level.
- The efforts largely focused on producing surplus through improved productivity without creating the required link to markets that necessitates a concerted effort of different actors such as input suppliers, producers, traders, transporters, processors, marketers and consumers.
- Each of these actors has worked independently and often times in a competitive rather than a complementary spirit that made farmers the eventual victims.

**Bottleneck 3: Low value chain implementation capacity of the extension staff**
- Frontline extension staff usually focus on promoting the use of improved technologies and practices to increase production and productivity through various extension communication methods like demonstrations, field days, group meetings and through on-farm and home visits.
- This is partly due to their training orientation to pushing technologies than being market-oriented.
- In addition, they have very limited knowledge and skills on concepts of value chain development, marketing and marketing functions and facilitation skills to build businesses and create business relations among the marketing actors.
- Because of this gap, the provision of extension service remains production focused.

**Bottleneck 4: Ineffective linkage among value chain actors**
- Poor linkages and lack of trust among value-chain actors including input suppliers, producers, processing firms and exporters and other supporters undermine development of a value chain approach.
- Agricultural Development Partners’ Linkage Advisory Councils (ADPLAC) was established to improve the linkage and collaborations among the stakeholders in the extension service, in particular, and the agricultural development, in general.
- However, it is observed that this approach has not been functioning well and has not focused on specific value chain commodities as a means of solving strategic problems along the value chain, from input supply to consumption.
- This has been in part driven by poor participation of private actors in the ADPLAC forum.
5. **MODULE 2: FUNCTIONING VALUE CHAINS AND INNOVATION PLATFORMS THROUGH ACC APPROACH**

**Bottleneck 5: Limited access to market information by farmers**
- Farmers need different kinds of information to make informed decisions on their agricultural activities and product types.
- Farmers have information on increasing the quantity of a product, but not on the quality requirements of consumers, processing firms and export markets, which is mainly caused a result of inadequate value chain approach.
- There is also poor coordination among the concerned institutions and offices in the provision of market information.
- This leads to the production of low quality products and low prices, and hence low benefits to farmers.

5. **Key Systemic Interventions to Address the Bottlenecks**
The following six key systemic interventions are proposed to address the bottlenecks of promoting the value chain-based extension services in the country:

1. Build the capacity of the technical staff at various levels to provide market-oriented extension services.
2. Promote value chain-based extension services through the ACC approach.
3. Select appropriate commodities to focus value-chain approach.
4. Enhancing capacity development of the actors.
5. Promoting value chain-based linkage development.
6. Improving access to market information by farmers.

**Intervention 1: Build the capacity of the technical staff at various levels to provide market-oriented extension services**
- To implement effective market-oriented extension services in a successful way, it is important for the technical staff at various levels to have basic knowledge and know the basic principles of agricultural market, marketing and agribusiness, among others.
- This will enable the extension personnel to effectively discharge their responsibilities to deliver and promote market-oriented agricultural extension services.
- It is therefore imperative to organize and implement national level market oriented extension capacity building programs for technical staff at various levels.
- This needs to be augmented by regular market-oriented workshops at various levels to create the necessary awareness about market-oriented production system among the key agricultural extension stakeholders.
- Creating an enabling environment such as basic infrastructure, for example, for information, communication and technology (ICT) and incentive mechanisms is crucial in making the effort a success.

**Intervention 2: Promote value chain-based extension services through the ACC approach**
- To move from production focus to sustainable market-oriented extension services, a value chain extension approach that focuses on selected strategic commodities in different agro-ecologies or geographies should be adopted as a policy.
- The Agricultural Transformation Agency (ATA) in collaboration with federal Ministry of Agriculture and Natural Resources (MoANR) and the BoAs have started implementing this
5. **MODULE 2: FUNCTIONING VALUE CHAINS AND INNOVATION PLATFORMS THROUGH ACC APPROACH**

approach in the four major regions on priority commodities, but it has to be scaled up to all regions including in pastoralist and agro-pastoralist areas.

- The ACC approach promotes specialization, diversification and commercialization, enhances production and productivity, ensures quality of outputs, aggregation and value addition to secure reliable domestic and export market linkages.
- The ACC also provides an integrated platform to implement multiple interventions across the value chains and across sectors, improves focus and coordination among the public and private sectors, various farmer organizations, donors and NGOs.
- At each ACC commercial farm service centers should be established to (1) serve as one stop-shopping for all agricultural inputs and (2) to serve an aggregation center for the produce to aid marketing. Commercial farm service centers have to be run by cooperative unions and private sector on a competitive basis.
- Success in this approach will be guaranteed through good governance, sustainable financing until the farmers in ACC develop financial capabilities, organizing joint regional planning, and capacity building in the areas of business plan and work plan preparation and implementation, effective communication, performance based evaluation, change and risk management.
- The different actors should play specific roles that need to be spelt out clearly with accountability.
- The government can lead the process and take the lion’s share of responsibilities initially with its role diminishing with time to focus on quality control and good governance.
- Similarly donors and NGOs can contribute significantly at initial stages, especially in the areas of capacity building and provision of resources with farmers, farmer organizations and the private sector taking more responsibility going forward.

**Intervention 3: Select appropriate commodities to focus value-chain approach**

- Value chain commodities could be identified in different ways such as: on the basis of the importance to the economy in addressing food security and poverty reduction, competitiveness, etc.
- Thus, in value chain development approach, extension staff are expected to play the following roles and responsibilities:
  - Provide specialized and focused training and advisory services on selected agricultural commodities/value chains, including pre- and post- harvest handling and market access to DAs and other extension workers working on value chain
  - Assist farmers to access market information including prices, quality requirements of markets, etc. This will be achieved through motivating and supporting the private agro-processing industries and input suppliers to work with the public extension
  - Facilitate formation of farmers groups and development on the basis of value chains for group learning, value addition and collective marketing. The commodity based farmers groups will be linked to cooperatives, processing enterprises and agro dealers to access inputs, information on quality requirements, advisory and training services
  - Facilitate linkages among the various operators and other stakeholders who are involved in selected value chains
  - Provide advisory services and trainings to smallholder farmers to become value chain and business- oriented
5. **Module 2: Functioning Value Chains and Innovation Platforms through ACC Approach**

- Ensure enabling environment for market actors to develop concrete business-to-business relationships

**Intervention 4: Enhancing capacity development of the actors**

- Adopting a value chain development approach requires a shift from production focus to value-chain focus through changing the orientation and capacity of the extension staff at all levels
- Some of the capacity building interventions to be considered are:
  - Revisiting the institutional arrangement and gaps of the public extension and research institutions to be able to provide a coordinated support to selected value chain commodities
  - Inclusion of value chain development and agricultural marketing subjects in the curricula of A-TVETs and Higher Learning Institutions (HLI)
  - Provision of in-service practical training to all extension workers to develop their capacity and skills on marketing and value chain in the areas of:
    - Concepts of value chain development, selection process of value chain commodities, value chain analysis, value chain actors mapping, value chain upgrading strategies, value chain governance, gender mainstreaming in value chains, among others
    - Gathering and analysis of market data to investigate marketing opportunities, product development strategies, facilitation of market linkages, business plan development including profit and loss statement
    - Marketing and business-to-business linkage facilitation
    - Enterprise development including investment decisions and running competitive crop and livestock enterprises
    - Organizational and leadership skills needed to support the formation and functioning of self-help small farmer groups and producers marketing associations
  - Strengthening the private sector and cooperatives and unions to sustain market linkages with smallholder farmers in terms of input and output marketing
  - Developing the capacities of sector/value chain commodity associations for them to be able to provide services to members in a sustainable way and be recognized by other stakeholders.

**Intervention 5: Promoting value chain-based linkage development**

- The basic characteristic of a value chain development is market-focused collaboration for different business enterprises to work together to produce and market products and services in an effective and efficient way.
- Thus, creation of linkage platforms on the basis of a particular value chain commodity like honey platforms, dairy Platforms, wheat platforms, etc.
- Such specific platforms are vital to promote dialogue, enhance learning, decision making and collective action and to develop partnerships and strengthen relationships among the actors.
- These actors can be sub-divided into value chain actors and value chain supporters.

**Intervention 6: Improving access to market information by farmers**

- Provision of market information at the right time to the right people in the right way is critical to strengthen the partnership among the value chains to make decisions.
5. **Module 2: Functioning Value Chains and Innovation Platforms through ACC Approach**

- Market information includes, type and quality of products, their reliable sources and prices, inputs and their prices, quality and quantity requirements of agro-processing industries and consumers, demand and supply trends, and weather forecast.
- Thus, there is a need to implement a well-organized and consistent marketing information supply system to smallholder farmers.

6. **Members of the Value Chain Commodity Platforms and Specific Functions of the Extension Interventions**

- Both value chain actors and service providers/value chain supporters are members of the value chain commodity platforms.
- Value chain actors are those who take ownership of a product through the exchange of money or equivalent goods or services during the transaction process as the product moves from conception to end users.
- On the other hand, individuals, institutions or firms providing a service without taking ownership of the product are classified as service providers or value chain supporters. Value chain supporters are essential for value chain development and they include providers of sector-specific input and equipment, financial services, business management services, and market information and technology, advisory services, and others.
- Government will take the lead role for the coordination of the platforms.
- However, there is also a possibility to give the coordination responsibilities to leading processing and export companies and sector associations.
- For instance, beekeeping association in Ethiopia is currently organizing multi stakeholder platforms for honey value chain at national and regional levels with support of projects.

Specific functions of the extension interventions include:

- Bringing effective coordination, collaboration and trust among the VC actors.
- Improving coordination of value chain activities with a focus on a particular product. These include, among others, input supply, access to finance, extension and research support, marketing, value additions.
- Identification of bottlenecks, strategic issues and requirements for the development of the value chains.
- Facilitation of information sharing and collective learning.
- Improving efficiency and competitiveness in different value chain segments and functions.
- Helping stakeholders to share responsibilities to sustain the development of the value chains.
- Creation of business to business relationships between actors of the value chains.
- Promoting quality-based payment system to encourage farmers to meet market standards.
- Working to ensure that tangible benefits are fairly distributed to all actors mainly smallholder farmers.

7. **Small Group Works and Presentations**

- In each small group, let you take one case of value chain commodity platform, and discuss and present its main challenges and opportunities.
- For the challenges, please forward the possible/potential intervention correspondingly.
6 MODULE 3: SELECTING SUITABLE IRRIGATION EXTENSION COMMUNICATION METHODS FOR DEVELOPMENT OF SSI AND MI SCHEMES

Module Outline

1. Objectives of the Module
2. Introduction
3. Principles of selecting effective irrigation extension methods
4. Types of Group extension methods
5. Important considerations in selecting appropriate method
6. Small Group Works and Presentations on the effective communication methods for adoption of improved irrigation technologies in SSI and MI schemes

1. Objective of the Module
By the end of this module, participants will be able to:

• Apply suitable extension communication methods effective for irrigated agriculture.
• Understand the objective of irrigation extension as a part of an agricultural extension system to advise water-user farmers in all aspects of irrigation water development and management, including the formation of water-user associations and to persuade them getting information, knowledge and skill development to enhance adoption of improved irrigation technologies.
• Analyze the main systemic bottlenecks for failing extension communication efforts in the SSI and MI schemes.
• Plan and undertake various extension communication methods including of ICT to promote improved irrigation technologies.
• Know their specific roles and functions in the extension communication methods.

2. Introduction
Agricultural sector in the developing world is changing rapidly and is driven by a number of external and global factors. The challenges the sector is facing are ever increasing and becoming more complex. Consequently, the demands placed on extension services, which have a crucial role to play in promoting agricultural innovation to keep pace with the changing context and improve livelihoods of the dependent poor small-scale land-holding farmers. A number of innovative approaches and methods have been tried in various developing countries contexts in agricultural extension to transform the system and to capacitate them to respond to the demands and challenges.

Irrigation has been given top priority to the development plans of the country with the ultimate objective of enhancing agricultural production and productivity. To overcome this objective Irrigation extension has a key role to play in the promotion of high value and marketable products and technology transfer to small-scale farm operations and promotion new technologies to advance sustainable development. In order to support the increased irrigated crop production, irrigation extension services play an important role.
Irrigation extension communication

Irrigation extension is a part of an agricultural extension system that advises water-user farmers in all aspects of irrigation water development and management, including the formation of water-user associations and persuades them getting information, knowledge and skill development to enhance adoption of improved irrigation technologies, and also facilitation of linkages with other institutional support services (input supply, output marketing and credit) that lead to a more efficient and better performing of irrigated crop production and productivity.

Communication – the sharing of ideas and information – forms a large part of the extension agent’s job. By passing on ideas, advice and information, the Irrigation Development Agent (IDA) hopes to influence the decisions of farmers. He may also wish to encourage farmers to communicate with one another; the sharing of problems and ideas is an important stage in planning group activities. The extension agent must also be able to communicate with superior officers and research workers about the situation faced by farmers in his area.

The key point in the irrigation extension system is the regular fixed schedule of visits by the IDAs to water-user groups so that the group knows when the IDA should be with them. During each visit, the IDA meets the contact-water-user of the irrigation block group. Also, the IDA makes efforts to meet other farmers.

There are various approaches which can be followed in establishing contact with as large a number of water-users as possible. The IDA must use contact-water-user as the main channel of communication to other water-users. The ultimate objective is to induce majority of water-users to adopt improved irrigation practices. The success of irrigation extension largely depends on the following factors:

- Proper selection of Contact-water-user farmers.
- Timely and regular visits by the IDA to contact farmers and other water-users.
- Identification of clear cut irrigation extension messages (impact points) suited to water-users’ requirements and their diffusion through contact-water-user and ‘water-user groups’ to others.
- Feedback of water-users’ problems and their experience in adopting extension messages.
- Well organized monthly training program for irrigation technicians.
- Close monitoring and supervision of irrigation extension activities by supervisory staff
- A competent research staff and facilities to respond to technical issues and come out with location-specific recommendations on improved irrigation practices.

3. Principles of Selecting Suitable Extension Communication Methods and Approaches

No single extension method and approach is better than the other or no extension method and approach is considered to be superior to another. Because, each method and approach has certain advantages and disadvantages depending on the problem to be solved and activities to be implemented. Hence, it is recommended to use the combination of methods and approaches for improved efficiency and effectiveness. Experience in extension work has shown that the more the number of ways new information is presented the faster and effectively an individual learns. For instance, if a demonstration stimulates group discussion, two methods are utilized which will reinforce the information considered in the demonstration. Learning /Teaching can be reinforced
and supported by use of visual aids and written materials because they facilitate understanding, depending on the learner’s profile.

Critical elements of the irrigation extension services are the way the process of information and technology transfer are set-up and the type of communication established. The process is determined based on water-users’ level of education, their knowledge and skills in irrigation and their access to communication means. Furthermore, the type and complexity of information that is conveyed is a factor in what format and pedagogic process the communication need to be established. They are the methods of extending new knowledge and skills to the water-users by drawing their attention towards them, arousing their interest and helping them to have a successful experience of the new practice. Based upon the nature of contact, the extension communication methods are divided into individual, group and mass-contact methods.

**Individual-Contact Method**

Individual extension method is when an extension worker interacts on one-to-one basis with the individual learners or farmer. In other words, individual extension method involves the process of meeting/ contacting the farmer or learner individually. Through working individually, the extension worker learns how the people are thinking, what they need, how they carry on their work and what they encountered in running their activities. In addition, it provides the opportunity for the local citizens to get to know the extension worker so that the personal bond between the extension worker and the community can be better established. It also provides the opportunity for mutual discussion (dialogue) between the extension workers and the farmers.

The main purpose to visit an individual farm or household is to identify and analyze the main problems and to provide advice on the best actions to take for overcoming them. In many other situations the purpose of individual-contact methods includes:

- Specific advice has been requested by a water-user of the household.
- The IDA may wish to develop their knowledge of a particular area or the irrigation scheme and identify some of the common problems water-users face.
- The IDA may wish to create awareness amongst water-users they have visited and stimulate their involvement in extension activities.
- The IDA may wish to familiarize with a particular farm and farm family, including non-agricultural activities which contribute to the family’s livelihood.
- The IDA may wish to learn about innovative irrigation practices or household water harvesting management conducted by a particular water-user.
- The IDA and a water-user may wish to discuss overall irrigation planning and management.

Personal and direct contact is strongly favored by farmers and extension services, because of its several advantages. These include:

- It is a very good way of supplying information to solve a unique problem.
- It gives the extension worker to an opportunity to know the farmer very well, i.e. his feelings, interest capabilities, situations.
- Gives the opportunity to observe the crops grown on specific farmers’ land.
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- Helps the extension worker to get first hand idea about the needs, resources, limitations, problems of the farmer and their possible causes.
- Enables to have first-hand information on problems and their possible causes.
- Help to integrate the information from the farmer, for example, goals, means and experience with information from the extension agent.
- Enables the farmer to clarify his feelings and to choose between conflicting goals.
- The extension agent can increase the farmer’s trust in him/her activity/job.
- Builds up rapport and helps to have empathy.
- Creates desire and conviction among farmers.
- Facilitates instantaneous feedback.

Individual contact has some serious limitations too, such as:

- Time consuming and relatively expensive
- Low coverage of clients
- Possibility of favoritism to some individual clients

There are several methods of individual extension method:

- Farm and home visits
- Office calls and inquiries
- Informal contacts
- Personal letters / telephone calls etc.

**Farm and Home Visit**

It involves meeting individually with the farmer or a member of farm family at farm or home. This could be initiated by the extension workers or the farmer. Even though it is a costly exercise, it has some benefits that make it very desirable. For instance, it helps in establishing rapport and personal relationship with the farm family. In this case, the extension workers need to visit different farmer and households. In doing so, care should be taken to visit both men and women farmers as well as other members of the farm family. Careful planning and preparation is important in this method.

**For planning**

- Obtain or prepare a community map
- Prepare and review of the visit record
- Maintain and activity calendar
- Inform in advance about the visit
- Prepare training/teaching aids or distribution material, if any

**When conducting the visit:**

- Respect farmers /local culture and norms
- Use local language, if not prepare good translator
- Greet the farmer and members of the farm family using their culture
- Establish rapport and have empathy
- Be informal and friendly
- Observe the conditions and activities of the farm
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- Discuss the observations with the farmer
- Have more active listening than more talking
- Ensure follow-up
- When you finish the visit thank the farmer for sharing his time, energy and information

Follow-up:
- Make notes on the visit record
- Prepare any additional information promised to the clientele
- Respect the client’s privacy
- Ensure follow-up contacts

Office calls and inquiries
This is concerned with personal visits made by the clients to the extension office, to seek information and assistance. To encourage office visits, the IDA should consider the following:

- Be on time or respect farmers’ appointment
- Place the office in a convenient place
- Keep regular office hours
- Keep the office neat orderly, and attractive
- Maintain an up-to-date bulletin board and have information materials readily available
- Make a special effort to put the visitor at ease and comfort
- Interact with the visitor warmly, generously and attentively

Formal and informal contacts
Formal contact is when the extension workers and farmers have a planned meeting and schedule with regard to agricultural extension. Informal contact is unplanned meetings with clientele in informal settings. Such meetings provide the extension worker with an opportunity to meet clientele in any informal situation, which facilitates the establishment of a personal bond, discussion of problems, and the recommendation of solution. These could take place on the street, in the market place at local celebration. As their meetings take place usually by chance, the extension worker should skillfully handle in utilizing such informal teaching situation.

Personal letters / telephone calls
These methods have the limitation of access of the client to the means due to illiteracy (if he/she cannot read or lack of access to telephones, but if they are overcome, it save time and cost would be the advantage. In developed economies, these are widely used as individual contact methods.

Disadvantages of individual extension
- Costs are very high in terms of travel resource, etc.
- Small proportion of a target group could be reached.
- It is seldom a solution for promotion of collective interests.

Group Contact Method
Under this category, the water-users are contacted in a group which usually consists of 15 to 20 farmers. These groups are usually formed around a common interest in irrigation water.
management and also within the proximity of their irrigation blocks. These methods also involve a face-to-face contact with the water-users and provide an opportunity for the exchange of ideas, for discussions on problems and technical recommendations, and finally for deciding the future course of action. Groups are main means of contact between the IDAs and water-users sharing information and technology transfer and also they play a critical role in problem identification and innovations. It is a key part of participatory extension processes.

It is more difficult to provide extension advice to every single farmer with limited extension staff and resources. Traditional extension approaches are often top-down and ineffective. Working with groups of water-users allows the IDAs to interact with larger numbers of water-users at the same time, using scarce resources efficiently. In addition, many activities are best performed by groups rather than individuals. Group members can pool their labor and other resources, divide tasks into manageable units, learn from one another, and make decisions jointly. The benefits of group method are:

- By uniting and contributing to a common pool, the group members are able to achieve things they would not be able to do as individuals. Many sustainable irrigation techniques are labor-intensive; the groups allow farmers to share labor to make improvements in their irrigation schemes. They reduce the burden of work for individual farmers by sharing it among many.
- Farmers can share irrigation implements, machinery, planting materials and other resources.
- Every group member receives a tangible benefit (such as a water tank, a cow, or seedlings).
- Groups provide an opportunity for strengthening friendship and teamwork, allowing members to share ideas, insights, experiences and problems.
- Groups provide a forum for experts and the IDAs to introduce ideas and skills that may be relevant to the water-users’ problems and needs.
- Groups may form to do certain things—often a money-making activity such as vegetable-growing and selling crops. These activities can make money for the group as a whole or for its members. But the groups can also take on other tasks that do not make money directly, such as procurement of irrigation inputs from multipurpose co-operatives, compost-making, canal maintenance, commodity storage, or other irrigation-related tasks.
- Groups can seek funding and advice from NGOs or donor organizations to support their irrigation development work. This type of support is not usually available for individuals.

Guiding the groups

Many of the activities in the list below are continuous and happen at the same time. The IDA should help and guide the group members through a participatory process, rather than forcing them or making decisions for them. Therefore, the IDA should:

- Conduct an initial survey to find the farmers’ attitudes and priorities, and to gain an understanding of the irrigation water management and its environment. Collect information on the local land, soil and climate types, vegetation and crops, social and economic characteristics. This survey can use a combination of participatory rural appraisal (PRA) techniques, questionnaires, and a review of existing information collected by Kebele administration and key informants. The survey can be conducted by the IDAs with the help of Integrated Agriculture Development Program (IADP) experts.
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- Help the farmers prioritize their problems and identify possible solutions and opportunities;
- Discuss the group approach with farmers. Tell them the importance of group approach.
- Help the farmers in the formation of groups.
- Identify potential farmers willing to join in the group. Group members should have common features: they may farm the same type of land, grow the same crop within the irrigation schemes or have similar irrigation equipment. They should attend group meetings, be interested in the topic, and willing to learn and share their knowledge with others. The ideal size of a group depends on its aims and focus. However, groups of about 15-20 farmers seem to work well. Participation of women in the groups provides an opportunity for women to learn, generate income, and take on responsibilities and leadership within the community.
- Help the group to determine what it wants to do: its aims and activities, plans and responsibilities. This should be a continuous process: the group should review its plans on a regular basis as conditions change.
- Help the group work out its dynamics and working procedures: how are meetings conducted, how is work organized, how are activities evaluated? Provide training on subjects such as facilitation, leadership, management, group dynamics and record-keeping, if required.
- Help the group decide how to run the group. It should develop a set of rules and bye-laws with the help of the IDAs. Determining these rules and procedures is a continuous process. The group should not try to fix them all at once, and should be willing to review its decisions as conditions change.
- Help the group to select its Group/Team leader through a democratic process. The Team leader will perform as a Contact farmer. The main role of the team/group leader is facilitation, problem-solving, mobilization, leadership, guidance/initiative, and to develop linkages with potential stakeholders.
- Help the group decide how to handle money and maintain accounts.
- Help the water-users identify promising irrigation technologies that they wish to test and adapt. Help them design and implement field tests of these technologies (see the section 3.1.6 on Participatory technology development approach).
- Arrange training and field visits to introduce the new irrigation technologies to the group members. Experience sharing visits to research sites or other irrigation schemes are particularly useful to demonstrate new technologies and how problems can be solved.
- Assist the group to refine and implement its plans.
- Create linkages with woreda offices, research, cooperatives, inputs dealers, credit agencies, market and NGOs so the group can access services and resources such as seed, fertilizer, credit, irrigation equipment and marketing facilities.
- Evaluate the results with the group members. Arrange evaluation sessions with all members, and invite members from other groups to help disseminate information more widely. Such sessions are a good opportunity to learn the feelings, needs and priorities of water-users.

The following are the group extension methods:

- Demonstrations
- Field days
- Farm walks
6. Module 3: Selecting Effective Irrigation Extension Communication Methods

- Group meetings
- Folk media
- Motivational tours
- Participatory technology development
- Formal training preferably in FTCs
- Farmer field schools.

4. Types of group extension methods

1. Method demonstration
   This is done to show how something is done step by step for the purpose of teaching new skills and practices.

2. Planning
   - Decide the purpose of demonstration
   - Prepare the operational schedule, step by step
   - Identify key points
   - Select and procure material and equipment needed
   - Prepare supporting visual aids
   - Prepare kits for trial by the learners
   - Rehearse the demonstration
   - Publicize to collect the audience

3. Conducting demonstration
   - Check that work place is convenient or not
   - Make sure that audience can see and hear
   - Find out what they know already about the practice
   - Get them interested in learning the practice
   - Explain the purpose of demonstration
   - Show each operation step by step, while narrating it
   - Repeat steps whenever needed
   - Stress key points and tell the audience that they are important
   - Present carefully, slowly and patiently
   - Seek questions for each step before going to next step
   - Present other visual aids in time appropriately
   - Summarize all steps covered at the end
   - Give chance to the audience to try by themselves
   - Distribute supplementary materials

4. Follow-up
   - Have a list of participants
   - Help the participants who seek additional information
   - Make a sample check of their skills and satisfaction
5. **Result demonstration**

It is to demonstrate or show what has happened or gained as result of using a given technology or practices. In other words, it shows why a practice should be adopted by physically showing how a new or different practice compares with a commonly used local practice. For example, to demonstrate application of fertilizer and its impact on yield and quality. It is a demonstration conducted by the farmer under the close supervision of the extension professional.

6. **Planning result demonstration**
   - Identify the problem to be solved
   - Decide the objectives
   - Gather complete information
   - Seek the assistance of the clientele in planning and carrying out the demonstration
   - Develop a complete plan of work
   - Select accessible demonstration plots
   - Visit the host farmer and work with him

7. **During the demonstration**
   - Request the area leaders to co-operate
   - Visit the demonstration site often and ensure success
   - Use the demonstration site for meetings and tours
   - Keep the results of both sites (the traditional and the new)
   - Publicize the demonstration

8. **After the demonstration:**
   - Evaluate
   - Provide a follow up information and training

Result demonstration, if properly planned and conducted, is likely to be the most successful way of communicating a practice and inciting its implementation. Proper selection of practice, farmer and the site are crucial to its success. Publicizing its results is a must after conducting a good result demonstration. Conducting a field day at the end of the result demonstration might be a good choice to publicize and convince a large number of nearby farmers. It is better to conduct a few good demonstrations rather than conducting a large number of poor ones. So, it is obligatory that the extension worker ensures the success of the demonstration, by providing close supervision.

9. **Field day**

It is a day or days in which an area containing successful farming or unsuccessful farming is open for people to visit.

10. **Planning field day**
    - Identify the objectives to be achieved
    - Select a demonstration site
    - Work with area leaders and the farmers
    - Publicize the field day
    - Display signboards at the field day sit
    - Arrange for an exhibition of related materials
6. **MODULE 3: SELECTING EFFECTIVE IRRIGATION EXTENSION COMMUNICATION METHODS**

- Arrange for transportation, if possible

11. **Holding the field day**
   - Distribute literature about the practices being demonstrated
   - Take visiting farmers around the plot
   - Let the host farmers explain the practices being demonstrated and new things he/she has learned
   - Hold group discussion with the participants

12. **Follow-up**
   - Evaluate the field day
   - Contact the farmers, who indicated interest

13. **Study tours/field trips**
    Farmers are shown farms and experimental fields outside their own areas. Its function is to make participants aware of innovations away from their home or gain an experience of other farmers.

14. **Planning field trip**
    - Identify the objective of the trip
    - Set aside adequate time to plan the trip
    - Contact site operators to obtain permission to visit
    - Secure transportation
    - Draw a tentative schedule
    - Finalize detailed schedule
    - Co-ordinate with site hosts
    - Make a “dry run” to make sure the proposed itinerary can be completed within the allotted time
    - During the trip, keep to the timetable

15. **Lecture**
    Lecture is one of the most common forms of presenting information to an audience, particularly of a large size. During lecture, communication is mostly one way: while the lecture goes on the audience listen and (normally) take notes. The effectiveness of lecture can be boosted if it is accompanied by appropriate visual support and written material.

**Advantages and disadvantages of lecture**

**Advantages**
- Useable with large groups of audience;
- Easy to organize as compared to other teaching methods;
- Within a short time, many subjects can be taught; and
- Can be used just almost everywhere

**Disadvantages**
- Minimal contact between the teacher and participants, no participation, no feedback;
- Not effective to reach higher level objectives, for example, synthesis, valuing, analysis; and
- Not that much effective for illiterate people
16. Group meetings/group discussions
It is the process of arriving at decisions or conclusions considering the different points of view of the participants. Discussions may form part of forum (discussion combining experts and laymen), panel (discussion among experts), question and answer session, etc.

Advantages of group discussion
- Sharing knowledge and experience
- Merging many viewpoints
- Involving in the learning process
- Improves communication skills
- Learners get clarity on confusion principles and theoretical concepts from lectures

17. Group size
Depending on situations the size can vary. But it is logical to range from 6 – 25 as far as the size does not greatly limit the participation of the members. In general, the size of a group to whom we want to convey the message depends on several factors among which the literacy level, knowledge, skill, experience, interest and resources (availability of classrooms, teaching aid etc.) are the major ones.

18. Mass-contact method
IADP has to approach a large number of water-users for disseminating new information and helping them to use it. This can be done through mass-contact methods conveniently. These methods are more useful for making water-users aware of the new irrigation technology quickly and availability of inputs and relevant services. Individual and group contact methods cannot reach every single water-user who might need and use the information. The extension methods covered in mass-contact are:

- Radio
- Television with satellite antenna
- Internet facility
- Newspaper
- Print media and audio visual aids

In this case, mass media, including Radio, rank at the top in the awareness and interest stages of learning. Radio communication is one of the fastest, most powerful and in many countries including Ethiopia, the only way on communicating with rural people and water-users. Radio has been playing a significant role in bringing awareness and technological change among rural masses through Farm Broadcast Programs.

The other relevant print media materials are posters; leaflets or folders are meant to provide sufficient information to water-users. These materials create awareness among the community for technology adoption and dissemination.

Posters are usually large pieces of paper that displays a simple message for potentially large number of water-users and other farmers. They can be used to advertise or publicize a forthcoming extension event or communicate simple technologies or information. They are able to generate interest without requiring additional information. Ideally the posters are colorful and attractive, and
are displayed in an accessible place, e.g. market area, or community meeting point, FTC or woreda offices.

Leaflets/folders are printed pages which provide notes on the subject matter of a lecture or demonstration, or a topic of special or urgent interest. They are useful reference materials for people including water-users to keep it. By using them during extension events participants do not need to make notes. Leaflets/folders can be particularly useful in providing details of extension messages or impact points, by helping participants to remember specific information about names of improved crop varieties, source of agricultural inputs, irrigation equipment, agro-chemicals, markets, etc.

One of the key extension strategies for technology dissemination is through mass media for quick and timely transfer of technological information through Farm Radio Broadcasting for better extension services to the farmers. Considering the usefulness of farm radio broadcast, it is anticipated farm radio broadcast programs will be on air using Regional radio stations to disseminate information of agriculture

**Advantages of mass extension method:**
- it enables to spread information with low cost
- enables to give timely and quick warning information to large number of communities during the occurrence of disasters
- helps to reinforce points passed over by the DAs
- helps to communicate background information other development measures
- enables to exchange experiences to influence people

**Disadvantages of mass extension method:**
- passes through checking and selection process
- it uses only one-way information flow
- it requires skilled man power

**Remedial action:**
- combining mass extension method with other extension methods
- needs to prepare relevant message
- needs to repeat main points to increase perception

**Training:** is given to fill or improve skill and knowledge or introduce new technology or implementing systems and techniques to bring anticipated results and quality. Training need assessment is therefore required to detrain and gauge the level of existing knowledge and skill under the intended issues under discussion. Besides whatever training conducted there should be pre and post training evaluation to know how trainees bring improve their skill and knowledge. The pre and post evaluation should be carefully designed.

**Training Monitoring and evaluation:** the process of monitoring and evaluation needs to be participatory and includes all stakeholders at different levels. Irrigation extension system should fit itself with dynamic changes and demands taking place at local level. It should be flexible enough to change based on the evaluations and growing demand to be originated from the farming
communities. Thus, irrigation extension system will have a monitoring and evaluations system and the evaluation has two approaches.

One is evaluation of the ongoing process and evaluation of performance of the planned irrigation activities.

- It helps to take remedial actions on problems that arise during the implementation of the extension system.
- It helps to follow-up the success and performance of planned activities and achievement of its goal.
- It helps to compare and contrast between plan and achievement.
- It helps to give feedback to different stakeholders at different to contribute for future development plan preparation.

5. **Points to be considered to evaluate the success of irrigation extension performance**

- It should focus on the immediate/intermediate/ultimate outcome.
- It should assess the strengthening and weakness.
- It should assess whether if the objective is achieved.
- It has to identify whether if the planned supervision and/or technical support has been appropriately implemented.
- It should assess whether if development groups are organized and effective.
- It should confirm if effective motivation has been created at various levels.
- Identifying appropriate strategy that will ensure end-users need satisfaction.

**Radio**

Radio is a particularly useful mass medium for extension. Battery-operated radios are now common features in rural communities. Information can reach households directly and instantly throughout a region or country. Urgent news or warnings can be communicated far more quickly than through posters, extension agents or newspapers. Yet, despite radio mass audience, a good presenter can make programs seem very informal and personal, giving the impression that an individual listener is being spoken to directly. Radio is one of the best media for spreading awareness of new ideas to large numbers of people and can be used to publicize extension activities. It can also enable one community or group to share its experiences with others. Ways by which extension agents can achieve a more effective use of radio include:

- Recording farming broadcasts on a cassette recorder for playing back to farmers later. This could greatly increase the number of farmers who hear the programs.
- Encouraging farmers to listen to broadcasts, either in their own homes or in groups.
- Stimulating the habit of listening to farming broadcasts, and the expectation of gaining useful information from the radio. This can be done by the extension agent listening to the programs and talking about the contents in his contacts with farmers.

**Radio talks**

- Decide on the purpose of the talk; in other words, what you want people to know, learn or feel at the end of it.
- Attract attention in the first few seconds.
6. **MODULE 3: SELECTING EFFECTIVE IRRIGATION EXTENSION COMMUNICATION METHODS**

- Speak in everyday language, just as you would in a conversation, and not as though you are giving a lecture.
- Repeat the main points carefully to help the listeners to understand and remember.
- Give specific examples to illustrate your main points.
- Limit your talk practical by suggesting action that the listeners might take.
- Include a variety of topics and styles if you are given more than three minutes. A short talk could be followed by an interview of some item of farming news.

**Interviews**

- Discuss the topic, and the questions you intend to ask, with the interviewee beforehand.
- Relax the interviewee with a chat before beginning to record the interview.
- Avoid introducing questions or points that the interviewee is not expecting.
- Use a conversational style; the interview should sound like an informal discussion.
- Draw out the main points from the interviewee, and avoid speaking at length, listeners are more interested in the interviewee rather than you.
- Keep questions short; use questions beginning “Why”? “What?”.
- “How?” to avoid simple one-word answers, such as “Yes” “No”.

**Audio cassettes**

Audio cassettes are more flexible to use than radio, but as a mass medium they have their limitations. Cassette recorders are less common in rural areas than radio and are thus less familiar to villagers as sources of information. However, agents involved in many projects have found audio cassettes to be a useful extension tool, particularly where information is too specific to one area for it to be broadcast by radio. The advantages of cassettes over radio are:

- The tape can be stopped and replayed.
- The listeners do not have to listen at a specific time of day.
- The same tape can be used over and over again, with new information being recorded and unwanted information being removed.

**Television and video**

Television, like film combines vision with sound and like radio, it can be an instant medium, transmitting information directly to a mass audience. Television signals can be broadcast from a land-based transmitter, by satellite or through cables. However, in many countries, television transmission and sets are still restricted to urban areas, and the potential of television for rural extension will remain low until sets become more widely available. Television sets are much more expensive to buy and repair than radios, and program production costs are also far higher, where television has been used for rural extension communication, access and impact have been increased by group viewing followed by discussion.

**Traditional Media**

Traditional forms of entertainment can also be used as extension media. Songs, dances and plays can convey information in an interesting way. Even when they are prepared in advance, they can be adapted at the last minute to cater to local situations and response from the audience. No modern technology is required and these media are especially useful where literacy levels are low. By
involving local people in preparing the plot of play, extension agents can stimulate the process of problem analysis, which is a fundamental part of the educational aspect of extension.

**Newspapers**

In a society where literacy levels are high, newspaper becomes an important medium for extension as well. In addition to news items, these papers carry feature articles on different topics, among which development related topics also find a place. In several countries, most of the daily newspapers devote one full page for agriculture or development related topics at least in every week. In a country like Ethiopia with high illiteracy level, particularly among rural folk, use of newspapers as an agricultural extension channel will take some more time.

**Advantage and disadvantage of Mass media**

**Advantages:**
- Helps to multiply the impacts of extension activities
- Cost per person reached is low
- Speed of message to a large audience is relatively rapid
- High coverage extension message

**Disadvantages:**
- Tend to be one way
- Requires professional skills
- Messages are short lived
- Feedback obtained is very, very low
- Possibility of giving adjacent message is low
- To give specific information to specific group /area is not possible (not selective)
- Possibility for audience to ignore the program is high
- Message transferred to all society is the same

**Remark:** No single method is important over the other, hence, the use of combined method is recommended

6. **Important Considerations in Selecting Appropriate Method**

The extension-communication methods are the tools and techniques used to create situations in which communication can take place between the farmers and the IDAs. A proper understanding of these methods and their selection for a particular type of irrigation intervention are necessary. The IDA will make an assessment on how to reach farmers and which extension communication method will be appropriate based on the given situation in irrigation schemes. How should the IDA decide which method is most appropriate? One key factor is the stage and an understanding of adoption process. The adoption process is consisted of five distinct stages: awareness, interest, evaluation, trial, and adoption. It provides a useful guideline for selecting appropriate methods applicable in irrigation extension.

1. **Awareness stage:** In this stage knowledge of the innovation is critical to the individual water-user. Mass media and popular theatre are the preferred methods because they can reach many water-users at the same time. In using the mass media, the IDA must pay
attention to the characteristics of the audience targeted in terms of using their local language, culture and social norms in presenting content to its audiences.

2. **Interest stage:** This stage emphasizes on the adoption process, knowledge continues to be important, but building a positive attitude towards the innovation becomes the critical issue. For this reason, the desired methods should include information strengthening and attitude building as their goal. These methods should use the senses of hearing and sight, either individually or collectively. Group meetings, group discussions, radio forums are suggested for strengthening knowledge, while field days and farm visits will allow individuals to see what they have been hearing, thus providing the opportunity for building the desired attitude towards the innovation.

3. **Evaluation stage.** This is the most critical stage in the adoption process, because the outcome usually determines whether or not individual water-users proceed to the trial and adoption stages. At this stage, people need to match knowledge against facts. Water-users need to be assured that what they heard and saw are indeed workable. Result demonstration, farmer exchange, and field days are recommended because they allow individuals to reinforce their interest by viewing tangible evidence. Within this group of methods, farmer exchange is an important method.

4. **Trial stage.** In this stage, an individual farmer actually tests the innovation to see if reality matches the expectations of recommended irrigation technologies by using small-scale experimental efforts or method demonstrations. Therefore, in this stage, the IDA has the responsibility to develop an experimental/demonstration plan for technology trial for each water-user (farmer) groups in the SSI and MI schemes. The IDA has to remember that, although similar water-users are adopting similar techniques, the problems experienced are not always the same. At this stage, methods for persuading the water-users’ interest through use of their exchange and skill training learning outcome can be useful in helping them continue for adopting the recommended irrigation technologies through trial process.

5. **Adoption stage.** In this stage once the farmers start adopting; extension should continue to support their efforts. Recognition programs can be used to encourage water-users to continue adopting. The goals and criteria for these methods should be carefully developed so as not to bring out any negative effects because of poor planning and implementation.

To achieve the maximum results from the methods selected at different stages, the IDAs must bear their understanding of the learning process. For instance, in group meetings the IDA can use a lecture format, supported with a video, and followed with group discussions. While in selecting the above suitable methods in irrigation extension, the IDA should take into consideration of the following criteria:

- **Cost** – selecting methods which can be implemented within a budget and are cost effective.
- **Coverage** – choosing group extension methods which will reach more water-user farmers.
- **Complexity** – selecting simple methods that do not need a lot of materials, or a lot of time to plan and implement.
- **Skill** – choosing methods that the IDA has capacity to implement, if not training may be required.
- **Targeting** – selecting methods which are especially appropriate to water-users.
7 MODULE 4: PARTICIPATORY IRRIGATION EXTENSION PLANNING AT THE WOREDA LEVEL, PLANNING STEPS AND PROCEDURES

Module Outline

1. Objectives of the Module
2. Planning
3. Steps in irrigation extension programme planning
4. Planning irrigation extension activities at woreda-level
5. Small Group Works and Presentations on irrigation extension planning

1. Objective of the Module
By the end of this module, participants will be able to:

- Apply suitable irrigation extension planning tools at woreda-level for development of SSI and MI schemes
- Understand the importance of irrigation extension planning as a part of an irrigation system to provide a way to coordinate individual decisions so that the ensuing developments support, rather than detract from one another
- Learn the steps of planning efforts in regards to planning of woreda irrigation extension activities for improved irrigated agriculture
- Plan and undertake irrigation extension activities at woreda level through appropriate planning and budgeting
- Know their specific roles and functions in participatory irrigation extension planning

2. Planning
Planning can provide a way to coordinate individual decisions so that the ensuing developments support, rather than detract from one another. Planning can also provide facts on existing conditions and trends and it can evaluate each intervention in light of community objectives. It can even propose alternative intervention that might better serve community needs.

Why is planning important in irrigation extension activities?
One of the most important aspects of developing strong ways of winning is the planning because:

- **Planning is leveraged time.** 20 minutes of planning per day can improve your productivity immensely. Affording your time to plan will pay off in the future. You will make sure that you are staying on track with your goals and you can ensure that you become more task oriented. By simply taking 10-20 minutes to go through what your objectives or outcomes are, you will be more likely to achieve them and not get sidetracked which is quite easy to do especially when working online.

- **Planning provides the framework for informed decision-making.** By planning what you are going to do you will be establishing a framework and will be able to tick off items from your "to do" list as you go along. This is extremely effective way to manage any tasks that you have.

- **Planning reduces crisis management.** If you plan effectively, there is less likelihood of any critical issues coming up. However, it is important to be prepared for unforeseen situations occurring and be prepared to sit back and plan again around any issues.
7. **Module 4: Participatory Irrigation Extension Planning at the Woreda Level**

- **Planning allows focus and personal energy direction.** As you can appreciate, by establishing a focus through planning you will be able to channel your energy positively into reaching an outcome. Having a course of direction will assist you in accomplishing your tasks in a more timely and efficient manner.

- **Planning helps to eliminate:** A) bad habits, and B) fear of failure. If you stick to a plan you are more likely to break some bad habits you might have (i.e., surfing around the net without really accomplishing anything). By establishing a plan and sticking to it, you are less likely to fail.

- **Planning allows you to set priorities and focus on what is important.** Even within your plan, you can prioritize your tasks so that items you think are more important than others can be action accordingly. You need to discover what is important to you and sometimes go through a few boring tasks in order to get to the exciting end result. Effective planning will have a HUGE impact on breaking bad habits you might have and should lead to successful task management while doing irrigation extension planning.

3. **Steps in Irrigation Extension Program Planning**

   Good irrigation extension programs do not just happen. They are the result of careful consideration as to why the organization exists and what its members want to accomplish. The programs offered by your organization project an image, which will either attract new people or turn them away. Irrigation extension program planning is deciding what needs to be done, and who does what, when and where. The two key elements in successful program planning are the program or project itself and the interest and involvement of group members. Following are seven steps, which will help your organization, choose and plan a successful program that will interest and involve the membership.
The Planning Steps

1. Analyze
2. State the purpose of your organization. What is needed by the members and community?
3. State the objectives of the program
4. Take stock of your resources. Choose methods
5. Plan details – Assign responsibilities
6. Do it
7. Evaluate

Analyze the Situation
Take a look at your organization. Who is the target audience? Who are the members and what has been their involvement with the organization? Has membership been increasing or decreasing? What is the ratio of male to female members and what is the age range? What projects have been done or are currently underway? Have there been conflicts with events of other organizations? What finances and other resources are available. What happened last year? Having a good set of records and periodic surveys of the members will help to answer these questions.

Identify Your Organization’s Needs, Problems, Purpose and Goals
Your organization should consider the needs or problems the members and the community are facing. Consider where your organization is today and where you want it to be. It is important to establish or confirm your basic purpose so everyone inside and outside your organization can understand it. Agreement on the basic goals your organization wishes to pursue should reach amongst the members. Specific objectives that will help to accomplish each of these basic goals should outline annually and planners should keep these objectives clearly before them as they work.

Goals are a series of statements that describe the unique functions or primary interest areas of the organization. If an organization’s purpose was the “betterment of the irrigated crop production”, one goal may be to improve media coverage of irrigation issues and events. If there are no organizational goals, members will tend to lean towards their own personal needs more often than the needs of the organization. Challenging goals can result in a vibrant organization.

The constitution of an organization outlines its purpose and goals that justify whether or not to undertake certain tasks. Established organizations will have their purpose and goals already outlined...
by the founding group but these statements should be reviewed regularly. If the purpose and goals have become outdated or incompatible, then they should be rewritten. New organizations, on the other hand, will have to develop these statements from "scratch" to clearly identify what the organization is all about. One method of establishing these statements is to have key members of the organization (or the executive or board) act as a task force to draft the purpose and goal statements. During work sessions, each participant should draft his or her own statement and share it with the group. These statements should then be formed into one solid, comprehensive statement that everyone in the working group agrees with.

**State irrigation-extension programme objectives and solutions**

Once the concerns of your organization are identified and the broad goals have been stated, it is important to set specific, realistic objectives. These smaller, more manageable targets will lead to the accomplishment of each goal. Clear objectives should be mutually agreed to by the planning group. To reach the goal of "improved media coverage" for instance, a realistic objective may be to have at least one agriculture-related article in each issue of the local paper. Without realistic objectives, people often commit themselves to more than they can do and are unable to follow through or become overwhelmed by the size of the task and feel discouraged when things don't work. The objectives should be recorded and referred to frequently during the planning process.

The next step in extension program planning is to develop possible solutions to achieve your objectives. At this stage, it is important to be creative, "let the juices flow" and involve the membership. The best program plans are developed when many members share in the planning by expressing their needs and interests, and therefore take some responsibility for the program.

If a leader were to ignore members' ideas and allow decisions to be made by only a few, the group would lose members, power, energy and the human resources needed to do the job. The leader and a few members would end up doing everything. Members will work harder in support of programs which they helped to plan. All members should be aware of the goals and objectives, no matter who was involved in setting them, in order to build commitment to the programs.

Members' input can be obtained from opinion polls, suggestion boxes, informal conversation, or by evaluation sheets. Questionnaires can ask "What do you want from the organization?", "What do you think the organization should do?" and "What did you think of past programs?" Discussion groups or "buzz groups" of 6 or 8 members can be formed at a general meeting with each group reporting their program suggestions after a short discussion. Each group should have a representative who will also ensure that everyone has a chance to participate.

Brainstorming is another discussion technique used with either a large or small group of people. Participants should aim at producing a quantity of ideas rather than taking time to evaluate the quality of various suggestions. Every suggestion should be carefully recorded. Sending every media person to work on a farm for the summer might not be a practical solution but it might lead to the idea of holding an information day to "show and tell" reporters what issues face farmers. The least practical idea may lead to the best suggestion of the session by promoting further ideas.
Take Stock of Your Resources and Select Methods

The resulting list of program ideas should be examined carefully, and the pros and cons of each considered. Required time, money, and resources (physical and human) should be discussed. Does the irrigation extension program involve all members? Is it interesting to everyone? Does it include both fun and work activities? Does it meet the objectives of the organization? Have alternative plans been outlined in case a problem arises? Keep in mind county, regional and provincial organizational events which might conflict with or enhance your plans. For example, do not plan an event for the same day as the official opening of the new hospital if you want to have media coverage.

In making planning decisions, the planners must proceed slowly, dealing with everyone's concerns in order to maintain group support for the program. Remember, successful irrigation extension program planning takes time to make sure people have had a chance to speak, to explore alternatives and to understand the varied points of view. If decisions are made too quickly, then someone has probably been left behind.

Plan the Details

With your program objectives firmly in place, the details and action steps leading to the event now need to be outlined. Individual responsibilities must be assigned to accomplish these tasks. This is an opportunity to recruit others to help with specific tasks to both reduce the burden on some individuals and to enlarge the number of people involved and committed to the program. Regular progress reports to those who have been involved and others who know about the project will help to keep momentum and interest in the project. Be sure to build time into your plan for these reports. Realistic deadlines must be set for carrying out each phase of the program plan.

<table>
<thead>
<tr>
<th>Job</th>
<th>Deadline</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey cross-section of media, what they'd like to gain from such an event</td>
<td>January 15</td>
<td>John</td>
</tr>
<tr>
<td>Finalize panel participants and moderator</td>
<td>January 22</td>
<td>Mary</td>
</tr>
<tr>
<td>Book hall</td>
<td>January 30</td>
<td>Bill</td>
</tr>
<tr>
<td>Line up volunteers. Check date for conflicts with other events</td>
<td>January 30</td>
<td>Bill</td>
</tr>
<tr>
<td>Send written invitation to media</td>
<td>February 28</td>
<td>Mark</td>
</tr>
<tr>
<td>Prepare information kits</td>
<td>February 28</td>
<td>Mary</td>
</tr>
<tr>
<td>Issue general press release to the public</td>
<td>February 28</td>
<td>Lucy</td>
</tr>
<tr>
<td>Follow up with phone or personal invite to media</td>
<td>March 7</td>
<td>Mark</td>
</tr>
<tr>
<td>Set up for the event</td>
<td>March 15</td>
<td>Bill</td>
</tr>
<tr>
<td>Evaluation (immediately following the event)</td>
<td>March 15</td>
<td>Jen</td>
</tr>
<tr>
<td>Follow-up evaluation - How useful was it to participants. Take comments</td>
<td>March 21</td>
<td>Jen</td>
</tr>
<tr>
<td>Send thank-you letters</td>
<td>March 21</td>
<td>Mark</td>
</tr>
<tr>
<td>Write report for program planning file</td>
<td>March 31</td>
<td>Committee</td>
</tr>
</tbody>
</table>
7. **MODULE 4: PARTICIPATORY IRRIGATION EXTENSION PLANNING AT THE WOREDA LEVEL**

**Do It!**
Now that the irrigation extension program has been planned and jobs have been assigned, it can be implemented. Remember, plans made don’t always match plans used. The plan that was so carefully put together and recorded at every stage should serve only to guide the activity, not reduce flexibility. If a change in plan becomes necessary because a speaker cancels, then proceed to plan B, the slide show on a related topic. As the plan proceeds, it is important to keep everyone informed of progress, by phone, mail or meetings.

**Evaluate**
The final step in the plan is to find out what the participants thought about the program. Consider how the success of your program will be measured. How will you know if you have done a good job? Periodically through a long-term program, progress towards goals, tasks left to be done, relevance of goals to the group's interest and other concerns should be evaluated. By reviewing the program regularly, instead of just at the end of the year, changes can be made to assist in achieving the desired objectives. Set a time at the end of the program to evaluate the accomplishment of goals, and the attendance and involvement of members. Consider participants' reactions. What do they think might be improved? Getting and using feedback from the members will keep them involved in the direction of the organization and maintain their commitment to the group. Reconsider your tactics. Were they appropriate? Were alternatives required?

Judge your work plan. Were tasks done right? Were deadlines met? Assess communication within your organization. Did everyone understand the program plan? Periodic evaluations of any program can re-vitalize the program, group members and leaders. A systematic method of planning is essential. **Now...with the seven steps outlined and results of this plan carefully recorded, you are ready to plan the next irrigation extension program.**

4. **Planning Irrigation Extension Activities at woreda level**
Each year, irrigation extension staff at the woreda-level identify farmer information needs, and prepares an irrigation extension plan for the next financial year covering the irrigation systems. Generally, the annual irrigation extension plan includes major items of work, such as motivational tours, method demonstration, results demonstrations, experience sharing, field days and farmers training. During the year, the DA works closely with farmers in the schemes implementing activities from the annual irrigation extension plan. In many cases, implementing these activities leads to new ideas for irrigation extension events and for follow-up work, which was not in the annual irrigation extension plan. In order to maintain flexibility, and where these ideas involve no significant additional expenditure, they should be undertaken.
## Module 4: Participatory Irrigation Extension Planning at the Woreda Level

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Farmer Information Needs Assessment (FINA)</td>
<td>Working with the male and female farmers, operating small and large, to identify information needs, using problem census, PRA, meetings and the DAs Diary</td>
</tr>
<tr>
<td>2</td>
<td>woreda Irrigation Extension Coordination Committee meetings</td>
<td>Sharing information about farmer needs, available resources and ideas for collaboration between all woreda Irrigation offices and NGO extension agencies</td>
</tr>
<tr>
<td>3</td>
<td>Collecting planning information</td>
<td>Combining / Merging background information, monitoring and evaluation data, results of agricultural surveys, evaluation and FINA results to help in planning</td>
</tr>
<tr>
<td>4</td>
<td>Woreda Planning Workshops</td>
<td>Developing an irrigation extension plan on the basis of FINA and planning information, by involving all woreda irrigation extension staff, and possibly zonal irrigation extension experts, and inviting other organizations</td>
</tr>
<tr>
<td>5</td>
<td>Preparing woreda planning and budgeting documents</td>
<td>Writing up the results of the woreda planning Workshop and preparing documents</td>
</tr>
<tr>
<td>6</td>
<td>Zonal Irrigation Extension Planning Committee meetings</td>
<td>Reviewing and approving woreda irrigation extension plans</td>
</tr>
<tr>
<td>7</td>
<td>Preparing annual in-service training and media requests</td>
<td>Preparing requests for regional level mass media and in-service staff training programs</td>
</tr>
<tr>
<td>8</td>
<td>Consolidating annual woreda irrigation extension plan and budget</td>
<td>Consolidating annual woreda irrigation extension plans and budgets being prepared by the extension staff</td>
</tr>
<tr>
<td>9</td>
<td>Agricultural Development Partners Linkage Advisory Council (ADPLAC)</td>
<td>Conducting a technical review of irrigation extension plans at woreda level by woreda ADPLAC that includes research and other extension agencies</td>
</tr>
<tr>
<td>10</td>
<td>Adjusting woreda irrigation extension plans</td>
<td>Adjusting woreda irrigation extension plans on the basis of ADPLAC reviews</td>
</tr>
<tr>
<td>11</td>
<td>Preparing consolidated Irrigation Extension Plans and budgets</td>
<td>Consolidating all woreda level irrigation extension plans and budgets on computer for approval</td>
</tr>
<tr>
<td>12</td>
<td>Conducting in-service training</td>
<td>Training staff in all necessary technical and irrigation extension skills prior to implementing the extension plan</td>
</tr>
<tr>
<td>13</td>
<td>Implementing and monitoring</td>
<td>Implementing irrigation extension activities as planned, and using the extension monitoring system and evaluation (technical audits)</td>
</tr>
<tr>
<td>14</td>
<td>Evaluating last year’s irrigation extension program</td>
<td>Evaluating irrigation extension programs using knowledge, attitude and practice (KAP) surveys. Analyzing extension monitoring system and technical audit results</td>
</tr>
<tr>
<td>15</td>
<td>Developing budgets for the next financial year and reporting last year’s irrigation extension programs</td>
<td>Estimating budgets, which will be required for the next year, and preparing a brief annual report for the last year</td>
</tr>
</tbody>
</table>
IRRIGATION EXTENSION PLANNER FOR WOREDA (Sample)

<table>
<thead>
<tr>
<th>TASK</th>
<th>ACTIVITY</th>
<th>Responsibility</th>
<th>J</th>
<th>F</th>
<th>M</th>
<th>A</th>
<th>M</th>
<th>J</th>
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| 1. Farmer Information Needs Assessment (FINA)                        | • CONDUCT problem census, PRA  
• DA write farmers problems in DA Diary, regularly                                           |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 2. Woreda Irrigation Extension Coordination Committee meetings      | • Review FINA results and performance of irrigation extension programs                                                                        |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 3. Collect and bring together planning information                  |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 4. Woreda Planning Workshops (Annual woreda Irrigation Extension Plan) |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 5. Preparing documents of woreda Annual Irrigation Extension Plan and Budget |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 6. Zonal Irrigation Extension Planning Committee meeting            |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 7. Preparing annual in-service training and media request           |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 8. Preparing consolidated annual woreda irrigation extension plan and budget |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 9. Agricultural Development Partners Advisory Council (ADPLAC)     |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 10. Adjusting annual woreda irrigation extension plans and budget   |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 11. Preparing consolidated annual irrigation extension plans and budgets |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 12. Conducting in-service training                                 |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 13. Implementing and monitoring                                    |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 14. Evaluating last year’s extension program                        |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |
| 15. Developing estimated budget for the next year and report of last year |                                                                                                                                             |                |    |   |   |   |   |   |   |   |   |   |   |   |

1. Farmer Information Needs Assessment (FINA)

- Throughout the year, DAs conduct PRA, problem census, meetings and discussions with the farmers and record problems in the extension diary
- FINA results helps in the annual planning review process

2. Woreda Irrigation Extension Coordination Committee (WIECC)

- WIECC assist the ‘Participatory Irrigation Extension Strategies in the schemes
- The WIECC meets at least three times each year
- They can coordinate among other extension providers such as CBOs and NGOs
- WIECC may also have a role in developing specific ideas for collaboration between other agencies
3. **Collecting Planning Information**
   - High quality plans are made on the basis of relevant high quality information
   - Information about the current situation in the woreda includes:
     - market price of agricultural/irrigation outputs
     - population data
     - agro-ecological information
     - cropping patterns
     - monitoring results
     - evaluation results of various surveys
     - an understanding of partner agencies or bilateral projects in the area and their strengths and weaknesses
     - current agricultural/irrigation extension policy
     - any irrigation extension initiatives or priorities
     - current BoA or woreda budgeting criteria

4. **Woreda Irrigation Extension Planning Workshops**
   - Planning workshop is organized
   - Woreda staff should attend the workshop
   - Workshop has three sessions, a) consideration of planning information, b) generation of outputs, outcomes and impacts, c) selection of activities

5. **Preparing Woreda Annual Irrigation Extension Planning Form**
   - After the woreda planning workshop, woreda level irrigation extension staff can complete the woreda planning form (shown below)
   - The section in the form should correspond to the sessions of the woreda planning workshop

### ANNUAL WOREDA IRRIGATION EXTENSION PLANNING FORM

<table>
<thead>
<tr>
<th>Name of Woreda</th>
<th>Name of Zone</th>
<th>Information Source (tick)</th>
<th>Schedule</th>
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</table>
6. **Zonal Irrigation Extension Planning Committee**
   - Zonal irrigation extension planning committee (ZIEPC) also forms part of the chain of committees to assist the implementation of irrigation extension activities
   - The main function of ZIEPC is to review woreda plans before submission to the region and to review the activities in woreda plans prior to each session

7. **Preparing Annual In-Service Training and Media Request**
   - In-service training is planned locally in the same way as extension activities
   - The media (ICT) cell at woreda, zone and regional takes responsibility for providing media support to field staff
   - The support includes videos, flip charts, posters, and an annual extension planner

8. **Preparing Consolidated Annual Woreda Irrigation Extension Plan and Budget**
   - Zonal irrigation extensional staff itemizes the irrigation extension activities to be implemented at woreda level to support the woreda plans.
   - These include preparing woreda bulletins, zonal/woreda agricultural fairs and training woreda level irrigation extension staff

9. **Agricultural Development Partners Linkage Advisory Council (ADPLAC)**
   - Woreda ADPLAC provides an overview of its function and how they provide linkage among research, extension and farmers and private sectors
   - Woreda ADPLAC has a key role for reviewing potentially inappropriate technologies included in the woreda plans

10. **Advise Annual Woreda Irrigation Extension Plans and Budget**
    - Adjustments can be any of the following types:
      - deleting activities
      - adding additional activities
      - adjusting the detail of existing activities
    - Any adjustments made should not deviate from FINA results

11. **Preparing Consolidated Annual Irrigation Extension Plans and Budgets**
    - Woreda plans are consolidated by the concerned staff/experts
    - All data should be entered onto the planning computer using extension-planning software
7. **Module 4: Participatory Irrigation Extension Planning at the Woreda Level**

- During data entry, the person who is responsible checks each planned activity to make sure that it has the correct code number
- Once data entry is completed, the responsible person prints a report and it is then submitted to the concerned offices

12. **Conducting In-Service Training**
- Irrigation extension plans and the activities that comprise these plans can only be implemented if irrigation extension staff have the required skills
- There are chiefly two types of skills: a) technology skills, and b) extension skills

13. **Implementing and Monitoring**
- Implementing irrigation extension activities from the plan and follow up activities recorded in the DA diary is the key to successful extension work
- It is important to recognize that monitoring data collected during implementation is an essential component of the planning process

14. **Evaluating Last Year’s Irrigation Extension Program**
- Evaluation includes analyzing the monitoring information recorded during the implementation
- Evaluation should take place after each season to:
  - check whether objectives have been achieved
  - check whether objectives were appropriate
  - identify any particular strengths
  - identify whether there were any weaknesses

15. **Developing Estimated Budget Annual Reporting**
- Advance budgets are prepared by the respective woredas
- These are sent for pre-approval
- Finally, the estimated budget goes to the region for approval and allocation
8  MODULE 5: PLANNING, ORGANIZING AND CONDUCTING FARM IRRIGATION DEMONSTRATIONS WITH FOCUS ON PTD APPROACH

Module Outline

1. Objective of the module
2. Introduction and justification
3. Concepts and components of on farm demonstration
4. Criteria for site selection
5. Details of the demonstration
6. Data recording and reporting

1. Objective of the module
The objectives of farm irrigation demonstration modules are:

- To introduce new and alternative technologies and practices in a localized area under farmer’s management, through the demonstration farmers may be convinced to adopt a specific technology or practice and utilize it in large area.
- To check the efficacy of a technology/practice at a farmers’ field and their management conditions.
- To get feedback information for future research and demonstration.
- Build partner institutions and farmers’ capacity and create institutional base for self-management.

2. Introduction and Justification
Experience has shown that irrigation water application alone gives a partial increase in returns but a combination of irrigation and other improved practices such as improved seeds; fertilizers, agricultural chemicals and other improved technologies/practices give maximum benefit. Improvement of existing irrigation schemes performance in most cases is point of entry for irrigation development. Unsuitable or badly designed and maintained farm irrigation technology is often the cause for low performance. If water distribution is not reasonably uniform, water use efficiency will be very low and the benefits of improved irrigation practices will be limited.

Participatory researcher and demonstration results proved ways to increase farmers’ production with high adoption of technologies and practices. Moreover, individual demonstration plots proved valuable as a practical teaching to introduce and scale up new technologies and practices in rain-fed farming as well as irrigated farming. In demonstrating improved irrigation technologies and practices the woreda agricultural development office and the kebele DAs provide continuous technical support and monitoring. This guideline is prepared to assist regional irrigation staff undertake woredas and kebeles undertake successful irrigation technology demonstrations at SSI and MI schemes.
3. Concepts of on-farm demonstrations

Any demonstration conducted on a farmer’s field with their full management is termed as an on-farm demonstration. One of the major functions of extension workers is to create technology adoption by farmers and scaling up to farming communities. The best way to do this is use of participatory irrigation demonstration. On-farm demonstrations serve as one of the most effective extension education tools in group extension methods. Although complete demonstrations require considerable time and effort, the payback comes when farmers more readily adopt practices they perceive to be appropriate under their local bio physical and socio economic circumstances. The clients who observe demonstrations of the latest techniques or practices and then apply them to their own particular situations are our present and future extension leaders. Demonstrations should not be casually developed or implemented, rather as their name implies, demonstrations should have predictable outcomes based on a research finding. Demonstrations should illustrate the application of appropriate technology, that is, technology that fits the local set of conditions. When this occurs, the optimum adoption is gained.

Demonstrations fall into two main categories: result or method. The distinctions between the two types are not always clear, since many demonstrations incorporate aspects of both methods. Examples include growing of new varieties of crops with the recommended agronomic practices. Result demonstrations can be conducted over a single season or two seasons. Although some result demonstrations are conducted with an individual farmer, others are conducted with plots of groups of farmers. Those which are conducted with individuals are effective only when combined with group extension events like field days and group meetings at the demonstration sites. Depending on local conditions, local farmer problems, and the technologies which have been generated by the research program in response to farmer needs, use of a range of different types of result demonstrations speed up the adoption process.

The words on farm research/trial and on farm demonstration are sometimes used interchangeably. However, there are some differences and similarities. On-farm research is a problem-oriented approach to agricultural research that begins by diagnosing the conditions, practices, and problems of particular groups of farmers. Once the problems are identified, a research program is designed to address the problem. A key in such program is conducting the experiment or trial on a farmers’ field under farmers’ conditions and management. Those experiments are then evaluated using criteria that are important to farmers. That means new and improved technologies are identified through farmers’ participation and involvement. Results of trials are analyzed and used to make recommendations or develop appropriate technologies that could be used to conduct demonstration for further awareness creation and scaling up. Research/trial plots are generally undertaken on smaller plots using standard research designs with more replications to reduce experimental errors as much as possible.

On farm demonstration practically shows the benefits of using improved technologies and practices generated and developed from on farm research sites through farmers’ involvement or from on station research sites under full control of researchers. Therefore, the major objective of any on farm demonstration is to bring about adoption of technology by farmers through creation of awareness and change of attitude improving their knowledge base and skill. In both cases group extension events like group meetings and field days can be carried out at any crop development stage. Farmers’ reaction and feedback is collected and used as input for further improvement of the
technologies/practices. It is obvious that on farm research often has demonstration effect and demonstrations research effect.

Components of on farm demonstration
Demonstration of improved packages to increase agricultural production will be similar on irrigated and non-irrigated land. Agronomic packages comprise improved fertilization, improved varieties, improved water management, insect pest, diseases and weed control and better timing of farm operations. The different components of on farm demonstration include:

- Plot/section: The smallest unit of an area in a field demonstration
- Block: contains the different treatments to be demonstrated (complete block) or only some treatments of the demonstration (incomplete block).

4. Criteria for site selection
To identify the irrigation schemes and farmers plot for demonstration, in addition to the assertion of information from documents, field visits to the target areas and discussion with participating farmers are important. This visit helps to build rapport and to identify the most important problems for demonstration for farmers.

Selection of irrigation and HH water harvesting schemes
- The site selected for the demonstrations should be typical for the area. It should represent the climate and soil feature of other SSI and MI schemes in the area
- Well-functioning schemes and canal system with less maintenance requirements are preferable for efficient water delivery
- Irrigation schemes with relatively large area benefiting more farmers
- Irrigation schemes in well-staffed woredas/kebeles with better management by water-users and MI schemes with well participating HHs and families are preferable

Selection of plot for demonstration
- Plot with representative climatic and soil of the majority command area in the scheme.
- From the stand point of efficient demonstration operation in irrigated area, it is advisable to cover the whole commendable area of a selected tertiary for the purpose of demonstration. Functional tertiary canals and structures should be selected for the purpose for the proper supply of irrigation water. The tertiary canal as well as the demonstration plot should be provided with water without affecting other water-user groups in the irrigation scheme. In large canal systems water is usually supplied on rotation with little concern for crop water requirements. Change in the mode of operation from scheduled supply based rotation to demand driven based operation, but also provision of interim and on farm storage, could vastly improve the scope for improved scheduling. The most important precondition however is reliability in water supply. If the water supply is unreliable any farmer will over-water his field on the hope that the extra water applied will bridge over to time he may get water again. In the case of MI there should be a large number of plots scattered evenly in the woreda/kebele for wide adoption and easy of farmers visit.
- Avoid steep slope low-lying areas subject to flooding and shallow ground water table.
- Attempt to include female headed beneficiaries.
- Accessibility to visit by farmers and SMSs.
8. **Module 5: Planning, Organizing and Conducting On-Farm Irrigation Demonstrations**

**Participating farmers**

Participatory selection and identification of interested farmers to fulfil the objectives of the demonstration with focus on participatory technology development approach is very important. In PTD approach technology is being developed with the farmers, farmers as ‘insiders’ brings their knowledge and practical abilities to test the technology and the interaction with research and extension workers the ‘outsiders’.

In general, this is the process of developing technology that is led by farmers. The following criteria may be useful to identify participating farmers in SS and MI schemes.

- Possession of the right type of land for the demonstration
- Farmers who can lead the demonstration and experiencing the problem which the demonstration attempts to address
- Willing to undertake the demonstration based on the design and layouts agreed upon
- Willing to cover or share the cost involved
- Willing to share experiences to the neighbouring farmers
- Provide information to research and extension

**Technology selection**

Criteria for selection of improved irrigation technology for demonstration include:

- Technology that answer farmers’ priority problem
- Technology with low-cost that could be affordable by farmers
- Preference to techniques with high water use efficiency and sustainability
- Technology with economic advantages of increasing yield and improve quality
- High opportunity to scaling up for large number of farmers

5. **Details of demonstration**

**Size and number of demonstration plots**

From the standpoint of efficient operation of SSI systems, a pilot demonstration farm should cover the whole commanded area of a tertiary canal. Demonstration farms should permit extensive farming practices and full utilization of water without affecting other farms. The optimal commendable area size of a tertiary may vary from 2 to 10 ha. The area may in turn be subdivided into smaller units for demonstration purposes. At MI schemes due to the limited quantity of water small demonstration plot with size of 0.006 to 0.06 ha may be sufficient to meet the requirement. In this case a large number of demonstration plots scattered in the kebele is required to increase accessibility by farmers.

**Type of demonstration**

In addition to the characteristic of the site, which largely determines the range of options, selection of improved irrigation technologies for demonstration requires mutual decision of researchers, extension officials and farmers. Improved technologies and practices for demonstration may include one or more of the following:
8. **MODULE 5: PLANNING, ORGANIZING AND CONDUCTING ON-FARM IRRIGATION DEMONSTRATIONS**

- New crops and varieties: The introduction of new crops/varieties through on-farm demonstrations with predefined purpose and objective is important as farmers’ preference vary for rainfed cropping to irrigated-agriculture.
- Improved crop husbandry practices.
- The most promising crop husbandry practices will be demonstrated for farmers to adopt the most promising practice to enhance yield.
- Improved irrigation water management practices: Demonstration of improved irrigation water management practices include demonstration of improved irrigation scheduling, irrigation methods, supplementary irrigation practices, contour irrigation and irrigation at sensitive growth stages of the crops etc.
- Fertilizer rate and green manure: Fertilizer rate demonstrations accompanied by application methods and time of application are important to keep up the soil fertility and yield of crops under SSI and MI schemes.
- Drip application: Mainly to grow vegetables at micro irrigation sites.
- Designing of on farm demonstration: The design of on farm demonstration is based on the exploration of demand for innovation and the identification of available options for demonstration, which would potentially satisfy farmers’ timely demand. The design process involves a number of linked steps:
  - Define the specific objective, number of improved and control plots,
  - Determination of the plot size based on land availability and farmers’ willingness,
  - Budgeting of demonstrations
  - Availability of other required demonstration materials
  - Farmers willingness to cover expenses and manage and
  - Mitigation of environmental impacts

**Duration of demonstrations**

Demonstrations should be conducted at least for two or three successive years.

**Field day**

Farmers field days should be frequently organized to involve, demonstrate and give opportunity to other farmers group learn/evaluate how the new technology works successfully.

**Finance**

Financial requirement of demonstrations should be covered by farmers. But some external support will be required to cover the risk of demonstrations and provide incentives for innovations.

**Implementation procedure**

Demonstrations should be participatory in all steps of implementation. Participatory demonstrations result in high adoption and sustainability. Procedures for successful participatory demonstration involve:

- Organize farmers meeting in consultation with the community leaders or farmers’ groups.
- Clearly discuss the objectives of on farm demonstration and list farmers’ priority problems that could be solved through demonstration of improved technologies.
- Agree with farmers on technologies that could solve problems and decide if one or more of these technologies help solve their problems.
8. **Module 5: Planning, Organizing and Conducting On-Farm Irrigation Demonstrations**

- Discuss the details of the technology and potential benefits.
- Clearly discuss the mutual roles, commitment/responsibilities regarding implementation, costs, data collection procedures etc.
- Decide the number of farmers participating in a particular demonstration, remember that availability of demonstration materials may limit the number of farmers and decide the number of farmers participating in a particular demonstration.
- Identify training needs, if any, for each technology demonstration.
- Identify mechanisms for organizing field days.
- Evaluation.

**Institutions**

BoA Horticulture and irrigation development and extension process are responsible for conducting irrigation demonstrations in collaboration with woreda and kebele DAs. Other institutions like ARARI may also conduct re extension demonstrations.

6. **Data recording sheet**

   i) **Location**
   
   Zone ____________ Kebele_______ Size of Trial____________

   Woreda___________ Scheme_____ Type of Trial____________

   ii) **Previous cropping history of the site**

   ______________________________________________________

   iii) **Information from nearest meteorological station**

   - Average mean max temp.(˚C)
   - Average mean min temp.(˚C)
   - Humidity
   - precipitation
   - Wind (low, medium, high)
   - Sunshine hours
   - Evaporation from class A pan

   iv) **Field operation**

   - Date of 1st ploughing
   - Date of 2nd ploughing
   - Date of 3rd ploughing
   - Furrowing/ridging
   - Planting/sowing
   - Fertilizer application
   - Weeding
   - Topdressing
   - Chemical application
   - Ripening
   - Harvest
8. **MODULE 5: PLANNING, ORGANIZING AND CONDUCTING ON-FARM IRRIGATION DEMONSTRATIONS**

v) Yield record of crops

<table>
<thead>
<tr>
<th>Demonstration Type</th>
<th>Crop Type</th>
<th>Yield</th>
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MODULE 6: METHODOLOGY OF IDENTIFYING AND PROMOTING IRRIGATION EXTENSION BEST PRACTICES IN THE SCHEME

Module Outline

1. Objectives of the Module
By the end of this module, participants will be able to:

- Gear their focus and effort towards the promotion and expansion of irrigation for sustainable development
- Know the methodology of identifying and promoting irrigation extension best practices in the scheme
- Understand the need of rapid MLE of irrigation extension best practices for their further improvement

2. Small Scale and Micro Irrigation as Panacea for Smallholder Farming in Ethiopia

- Ethiopia is the highest populous country in Sub-Saharan Africa after Nigeria and agriculture is the backbone of its economy
- Its agriculture is predominantly a subsistent smallholder farming and 95% of smallholder agriculture in the country is rain fed
- And rain fed agriculture is seriously suffered with:
  - Recurrent drought and moisture stress due to erratic rainfall
  - Mostly single crop annually per field and low productivity per unit field per year
  - High pest incidences during rainy season favored by high humidity
  - Serious soil erosion and lad degradation aggravated by torrential rainfall on bare crop fields
  - Eventually high risk of production and low productivity
- All these rain fed associated production problems keep the people and the country at large in the vicious circle of food insecurity and poverty
- These rain fed associated problems can sustainably reversed through irrigation which can be used as supplementary, entirely, or both
- Hence, there is no any other important practice more than irrigation for farmers to break the vicious circle of food insecurity and poverty
- While the country is also endowed with huge water resources
- Since the smallholder farmers are scattered throughout the country, small scale and micro irrigation is more appropriate for Ethiopian smallholder farmers
To address the largest portion of farmers, therefore, the promotion of small scale and micro irrigation must be the top priority of the country’s water and irrigation development endeavors.

3. Methodology of Identifying and Promoting Irrigation Extension Best Practices in the Scheme

- Irrigation is not indeed the new practice for Ethiopian farmers.
- Traditional small-scale irrigation schemes have been developed and used long here and there in different parts of the county.
- Most of them are river diversions and surface irrigations (furrow or free flooding). The schemes range in size from less than 20 ha to 100 ha.
- Traditional irrigation schemes have the advantages of:
  - Beneficiaries ownership of the physical infrastructure and the social organizations.
  - Well known and accepted managing organizations and leaders.
  - Independence of external support for sustainability.
  - Labor intensive, but not capital intensive.
- However, traditional irrigation schemes suffer from the following limitations:
  - Frequent rebuilding of head works, gully crossings and canals requires large amount of labor and risk of injury or even death every year.
  - Very low conveyance efficiency because head works and canals leak significantly.
  - Inability to cross wide gullies.
  - No irrigation water regulatory and distribution structures.
  - Erosion of canals on command areas.
  - Don’t have study and design reports and difficult to trace back their history.
  - Limited command area due to inefficient diversion and very low irrigation efficiencies.
- To develop, manage and maintain these traditional irrigation schemes, beneficiary farmers organize themselves into associations (called water-users associations).
- No technical as well as financial input from outside and materials used for construction of headwork are fully local, namely stone, soil and wood.
- Although these traditional irrigation schemes have their own limitations, building sense of ownership and self-supporting management system including mobilization of beneficiaries with interest and respect can be identified as best irrigation practices from traditional irrigation schemes for further extension.
- In realizing the water-center development program of the country, modern small-scale irrigation schemes have also been developed in different regions of the country.
- These modern irrigation schemes are planned, designed and constructed by the government or other external body.
- These modern small-scale irrigation schemes are generally considered to be command areas of about 200 ha or less.
- Still in modern SSI schemes, gravity surface irrigation predominates with low irrigation efficiency, probably less than 30-40%. Few micro-earth dam and pump schemes exist due to relatively high cost.
- In terms of water source and abstraction methods, the major models of modern SSI schemes currently used in the country are:
  - River + diversion weir.
  - River + micro-earth dam.
9. **MODULE 6: METHODOLOGY OF IDENTIFYING AND PROMOTING IRRIGATION EXTENSION BEST PRACTICES IN THE SCHEMES**

- Spring + diversion weir
- River + pump
- Lake + pump
- Well + pump

River plus diversion weir is the most commonly used modern SSI model in almost all regions of the country.

- This model has the following advantages:
  - Relatively simple to study, design, construct and operate
  - Cost per hectare is relatively low
  - Sedimentation and seepage problems are minimal

- Therefore the river plus diversion weir schemes are more successful as compared to others

- As a result, currently regions are turning to and giving high emphasis to this model

- However, this model has the following limitations:
  - Can be applied only in rivers which are permanent and have a considerable discharge
  - Water harvesting in rainy seasons is not possible so that irrigation water shortages during long dry seasons
  - Commands very limited area due to limited discharge

- The other commonly used model is river plus micro-earth dam

- This model has the following advantages:
  - Water harvesting during the rainy season to use in the dry season
  - Appropriate in areas where there are no perennial rivers
  - Increased command area due to harvested water

- The limitations of this model are:
  - Investment cost per hectare is relatively high
  - Needs relatively highly qualified professionals and heavy machineries
  - Increased risk of seepage and sedimentation problems
  - Environmental impacts such as submergence of productive lands and infrastructure
  - Health hazards such as malaria and other water borne diseases

- Having all these advantages and disadvantages, regions are planning and implementing this model widely

- The pump models are also being implemented even though the operation and maintenance works are difficult to farmers. They require skilled manpower and relatively high cost for proper operation and maintenance

- Availability and access to spare parts is also another problem

- Well plus pump model is being piloted at Kobo Gerana valley (Amhara Region) and some private farms and found promising

- Planning of modern SSI schemes is carried out in the following three steps:
  1. Project formulation and identification
  2. Reconnaissance survey
  3. Feasibility study and design

- Modern SSI schemes are being conceived either in the office from the topo maps/aerial photos or by demands from the farmers

- Following the steps required the scheme would be prepared for implementation

- The constructed and completed schemes are usually handed over to water use associations (WUAs) for managements and maintenance
Micro-irrigation is also potentially appropriate for smallholder farmers which is applicable at household level

Micro-irrigation is referring to individualized small-scale irrigation technologies for lifting, conveying and applying irrigation water

It includes treadle and small power pumps to lift water, and a variety of irrigation application technologies such as small bucket and drip systems, and small sprinkler systems

The advantages of micro-irrigation technologies are:
- They can be adopted and used by individual farmers, i.e., are not depending on collective action by groups
- They are of relatively low cost in terms of their capital and operating costs (per farm, not necessarily per hectare) and therefore are potentially affordable by small farmers
- They are often highly efficient in use of water (high water productivity) while also improving crop quality and reducing labor costs
- They can be distributed by private firms through markets, i.e., are not dependent on being provided by government institutions

To distinguish it from commercially available ‘high-tech’ irrigation application technologies such as pressurized drip systems, micro-irrigation is sometimes referred to as “Affordable Micro Irrigation Technology

For water harvesting where the harvested volume of water is small, the use of micro irrigation is appropriate from the point of view of conserving water

Guiding Principles Followed in the Identification and Promotion of Irrigation Best Practices in the scheme

- Basically, there is no a single best irrigation practice fitting to all conditions
- Best irrigation practices are hence conditional to the circumstances of a given area/region including:
  - Socio economic situations of the society
  - Size of irrigable area, source and volume of available water
  - Quality of irrigation water and ground water as well as depth of ground water table
  - Evapo-transpiration potential of the area, soil type and ground cover/shade
  - Topography, slope and seepage
  - Severity of run-off, erosion and sedimentation vis-à-vis soil-water conservation measures
  - Kinds of crops, purpose of production and market situation
  - Technical and economic feasibility
- As indicated above, small-scale and micro-irrigation technologies, which are of low cost, affordable by poor, self-manageable and easily maintainable by local beneficiaries, are said to be best irrigation practices for smallholder farmers reside in very scattered manner
- With the support of government and/or other development partners, large- and medium-scale irrigation schemes (with the command area of >3000 ha and 200-3000 ha, respectively) are also potentials for areas where irrigable land is large and water resource is high
- In areas where irrigation water and/or ground water contains high salt, the topography is very sloppy and undulated, and seepage is serious, surface irrigation is not advisable, rather drip or sprinkler irrigation is recommendable
9. **MODULE 6: METHODOLOGY OF IDENTIFYING AND PROMOTING IRRIGATION EXTENSION BEST PRACTICES IN THE SCHEMES**

- Similarly, in areas where irrigation water is limited and evapo-transpiration is so high, drip irrigation is the best practice.
- Where rivers, springs, wells and dams are used as irrigation water sources, soil and water conservation measures are so equally important for the irrigation schemes to keep them alive sustainably.
- The choice of crops for the irrigation scheme is also important and high valued crops are normally recommended for any kind of irrigation schemes, while irrigation by itself is expensive.
- Linking irrigation produces with market is so crucial for the sustainability of any irrigation schemes.
- Last but not least, the best irrigation practices must be technically and economically highly feasible.
- Generally, identification and promotion of irrigation extension best practices in the scheme is so complex and hence necessitate the followings:
  1. Thorough assessments of all kinds of irrigation practices available in the country and elsewhere outside the country with due consideration of their pros and cons as well as their potentials and suitability to the social, economic, technical and environmental conditions of the targeted scheme(s).
  2. The assessment and identification of best fitting irrigation practices in the scheme must be evidence based possibly supported with research findings as well as shall be done by inter- and trans-disciplinary team.
  3. Potential irrigation practices for the targeted scheme(s) must be strongly supported with technical and economic feasibility.
  4. Prior to promoting/scaling up of the identified irrigation extension best practices in the scheme, they have to be tested at pilot level and optimized to meet farmers’ needs.

4. **MLE of Identified and promoted Irrigation Extension Best Practices**

- Due to their hasty and wrong implementation without keeping their quality or due to lack of proper follow up, it is petty that best irrigation practices failed to perform and thereby they are totally disregarded forever in the region/in the country.
- As indicated above, they would primarily be tested at pilot level in keeping their quality.
- If not, there would be a rapid MLE on the identified and promoted practices at wider scale for their continuous improvement.
- In place of rapid MLE is so necessary to rectify their implementation shortcomings timely and to look for further improvements.

5. **Small Group Works and Presentations**

- In each small group, let you take one case of irrigation extension best practice that you, your team or organization identified and promoted it for wider scaling up. Please discuss on the following guiding questions and present your results:
  1. What methodology was used to identify and promote it at wider scale?
  2. What is its status by now?
  3. If it fails or it is successful, what is/are the attributing cause(s) for its failure or success, respectively?
Module Outline

1. Objectives of the Module
2. Why training needs assessment and analysis of farmers
3. How to identify training needs of farmers
4. Other methods of identifying training needs
5. Small Group Works and Presentations on training needs

1. Objective of the Module
By the end of this module, participants will be able to:

- Understand the techniques of training needs assessment of farmers, what knowledge and skills the farmer presently has and what knowledge and skills the farmer must gain.
- Apply suitable training needs assessment tools to determine the skills/knowledge gaps of farmers in the areas of irrigated agriculture and thereby take necessary action for improvement of their skills to bring success to the development of SSI and MI schemes.
- Learn the art of formulating practical training lesson plans on improved irrigation practices for farmers based on the farmers’ skills/knowledge gaps in irrigation.
- Know their specific roles and functions in conducting training needs assessment of farmers involved in SSI and MI schemes.

2. Why training needs assessment and analysis of farmers
A training analysis of farmers is conducted ultimately to identify what areas of knowledge or behaviors that training needs to accomplish with farmers. The analysis considers what results the organization (or extension staff) needs from the farmer, what knowledge and skills the farmer presently has and usually concludes with identifying what knowledge and skills the farmer must gain (the "performance gap").

Usually this phase also includes identifying when training should occur for the farmers. Ideally, criteria are established for the final evaluation of training to conclude if training goals were met or not. Depending on the resources and needs of the organization or DA, a training analysis can range from a very detailed inventory of skills to a general review of performance results. The more complete the training analysis, the more likely that the farmer’s training will ultimately contribute results to the success of adoption of improved irrigation technologies in the schemes. Note that farmers can require training for a variety of reasons, which usually falls into two categories:

- Training to fill a "performance gap"
- Training to fill a "growth gap"
10. Module 7: Techniques of Identifying Training Needs Assessment of Farmers

Four steps to conducting a needs assessment for farmers

Step 1: Perform a "Gap" Analysis
The first step is to check the actual performance of farmers against existing standards, or to set new standards. There are two parts to this:

Current Situation
We must determine the current state of skills, knowledge, and abilities of farmers, particularly those involved in SSI and MI schemes.

Desired or Necessary Situation
We must identify the desired or necessary conditions for farmers and their personal success. This analysis focuses on the necessary job tasks/standards, as well as the skills, knowledge and abilities needed to accomplish these successfully. It is important that we identify the critical tasks necessary, and not just observe current practices in the irrigation schemes. As irrigation extension experts, we also must distinguish the actual needs of farmers from their perceived needs -- their wants. The "gap" between the current and the necessary will identify their needs, purposes and objectives. Here are some questions to ask to determine where training and development may be useful in providing solutions:

- **Problems or deficits.** Are there problems in the schemes that might be solved by training or other HRD activities?
- **Impending change.** Are there problems, which do not currently exist but are likely due to changes, such as new processes and equipment, outside competition and/or changes in staffing?
- **Opportunities:** Could farmers gain a competitive edge by taking advantage of new technologies, training programs?
- **Strengths:** How can farmers take advantage of their own strengths, as opposed to reacting to their weaknesses? Are there opportunities to apply skills to these areas?
- **New directions:** Could farmers take a proactive approach, applying hands-on to move their ability to new levels of performance? For example, could farmers-team building and related activities help improve their productivity?
- **Mandated training:** Are there internal or external forces dictating that training will take place? Are there policies or management decisions that might dictate the implementation of some extension programs? Are there governmental mandates to which we must comply?

Step 2: Identify Priorities and Importance
The first step should have produced a list of needs for training and development of farmers engaged in SSI and MI schemes or other irrigation interventions. We must examine these in view of their importance to our organizational goals, realities and constraints. We must determine if the identified needs are real, if they are worth addressing, and specify their importance and urgency in view of our organizational needs and requirements.

Step 3: Identify Causes of Performance Problems and/or Opportunities
Now that we have prioritized and focused on critical farmers' needs, we will next identify specific problem areas and opportunities available within the schemes. We must know what farmers'
performance requirements are, if appropriate solutions are to be applied. We should ask two questions for every identified need:
   I. Are farmers doing their jobs effectively?
   II. Do they know how to do their jobs?
This will require detailed investigation and analysis of farmers, their jobs, their performances — both for the current situation and in preparation for the future.

Step 4: Identify Possible Solutions and Growth Opportunities
If farmers are doing their jobs effectively, then perhaps we should leave well enough alone. (“If it isn’t broke, don’t fix it.”) However, some training and/or other interventions might be called for if it is important enough to move farmers and their performance in new directions. But if farmers are not doing their jobs effectively, then training may be the solution if there is indeed a knowledge problem. It may also require interventions by extension expert/DA in strategic planning, organization restructuring, performance management and/or effective team building.

3. How to identify training needs for farmers
A training need exists where there is a difference between “what is” and “what should be” among an individual or a group. The difference can be terms of knowledge, attitudes or skills that trainees need to more effectively perform their jobs. The need analysis process can be divided into two distinct procedural phases, these are:

   I. Job Analysis (identifying “what should be”) involves:
      • Identifying activity areas
      • Task breakdown or division of activity areas into specific tasks
      • Task analysis or division of tasks into specific actions
      • Division of action into specific steps

   II. Gap Analysis (identifying “what is”) involves:
      • Trainee skill estimation
      • Comparing “what is” with “what should be”

Conducting Job Analysis
A job analysis involves dissecting a job or major work event into its component parts that include number of different general activity areas. Each activity area consists of a number of specific tasks, which must be performed. Analysis of each specific task identifies a number of actions required to complete it. Analysis of each action identifies a number of individual steps, which are involved. After the components parts have been identified it is necessary to determine the frequency, relative importance and learning difficulty for each component that has been identified. Through the process of a set of following worksheets help design to assist the event organizer to document and analyze each component:

   I. Activity Breakdown Worksheet
   II. Task Breakdown Worksheet
   III. Action/Step Listing Worksheet
   IV. Action Analysis Worksheet
   V. Step Analysis Worksheet
Blank worksheets are shown at the end of this section. If event organizer/trainer decides to do job analysis, photocopies of the worksheets can be made. Identification and analysis of activity areas and tasks is used to:

- Determine what tasks are required in the job
- Determine which tasks are the most important to ensure adequate ability

Identification and analysis of actions and steps is used to:

- Identify the particular skills and knowledgeable required to perform a task
- Determine how the training course should be developed – what the content should be and how much time is required for each part of the course.

Following is an example of this process: **Note: For ease of understanding of the steps of the training, the sentences are phrases in active voice from this section.**

### COMPLETED WORKSHEET PROCESS

<table>
<thead>
<tr>
<th>Job</th>
<th>Activity Areas</th>
<th>Tasks</th>
<th>Actions</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable Farmer</td>
<td>Land preparation</td>
<td>Pest identification</td>
<td>Checking equipment</td>
<td>Pressure control</td>
</tr>
<tr>
<td></td>
<td>Selection of seeds</td>
<td>Pest scouting</td>
<td>Calibration</td>
<td>Pace/speed</td>
</tr>
<tr>
<td></td>
<td>Nursery Preparation</td>
<td>Disease identification</td>
<td>Protection</td>
<td>Nozzle height</td>
</tr>
<tr>
<td></td>
<td>Sowing</td>
<td>Selecting control method</td>
<td>Using sprayer</td>
<td>Coverage area</td>
</tr>
<tr>
<td></td>
<td>Nursery maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transplanting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fertilizing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pest and disease control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harvesting/Processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determining quantities to use</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determining cost-effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Using a knapsack sprayer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessing effects of control</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are four approaches that can be used to analyze the jobs farmer do. The best way is to have farmers describe the activity areas, tasks, actions and steps required in performing their jobs. This can be done through:

- Meeting held with group of farmers
- Observations and interviews conducted with individual farmers

Other approaches are

- Submitting tentative lists of activity areas, tasks, actions and steps to farmers or DAs for their scrutiny/agreement
- Having SMS/experts identify and list activity areas and critical tasks;
- Action and steps (this is most efficient but least accurate approach).

**Determining Activity Areas:** In order to make a qualitative judgment of relative importance of the activity, the first step of job analysis is to identify all the activity areas of the job that is included in the list. Following is the systematic procedure:
Step 1: Take a “Job Analysis Worksheet” and write the name of job at the top of each. Each of these forms will be used for breaking down and analyzing each of the most critical job tasks areas identified in the job analysis.

Step 2: List all the component parts or activity areas of the job on the Job Analysis Worksheet. This has to be done by interviewing the farmer who has the job been analyzed.

Step 3: Write one activity area on each line of the “Job Analysis Worksheet”.

Step 4: Determine how frequently work is performed in each activity area. Use the following scale:
- 1 = Seldom
- 2 = Occasionally
- 3 = Weekly to monthly
- 4 = Daily to weekly
- 5 = Daily

Step 5: Determine the relative importance of each task area. Use the following scale:
- 1 = marginally important
- 2 = moderately important
- 3 = extremely important

Step 6: Estimate the difficulty of learning to perform the work required in each activity area. Use the following scale:
- 1 = easy
- 2 = moderately difficult
- 3 = very difficult
- 4 = extremely difficult

Step 7: Add the total score for each activity area by simply adding the scores for frequency, importance and learning difficulty. Record the sum or total for each activity area in the appropriate column of the Job Analysis Worksheet.

**Completed Job Analysis Worksheet:**
The following is an example of a completed Job Analysis for the job ‘vegetable farmer’:

<table>
<thead>
<tr>
<th>Activity Area</th>
<th>Frequency Performed (A)</th>
<th>Importance (B)</th>
<th>Learning Difficulty (C)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land preparation</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Selection of seeds</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Nursery preparation</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Sowing</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Nursery maintenance</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Transplanting</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Water management</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Fertilizer application</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Weeding</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Pest and disease control</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Harvesting/processing</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

**Legend**

- (A) 1 = seldom
- 2 = occasional
- 3 = weekly to monthly
- 4 = daily to weekly
- (B) 1 = marginally important
- 2 = moderately important
- 3 = extremely important
- (C) 1 = easy
- 2 = moderate difficult
- 3 = very difficult
- 4 = extremely difficult
From the scores on Job Analysis Worksheet we can see that ‘Pest and Disease control’ is an important activity area. It is important because it is (A) performed frequently that is daily to weekly, (B) it is extremely important, and (C) it is extremely difficult. Using this scoring process, it helps to focus on limited training resources on the job activity areas, which is most critical. Those activity areas with the highest total scores will be priority elements for training if they correlate with the gap analysis.

**Task Breakdown:** Task breakdown involves dissecting activity areas into their component parts or tasks. Each activity area has a number of tasks within it. The process of Task breakdown is very similar to the Job Analysis process.

**Step 1:** Take several “Task Breakdown Worksheets” and write the name of an Activity Area at the top of each. These activities should be ones that you identified for the job analysis worksheets as having high scores. Each of these forms will be used for breaking down and analyzing each of the most critical job activity areas identified in the job analysis.

**Step 2:** Identify the entire specific contained in the activity area. Write one task on each line of “Task Breakdown Worksheet”. Again you should do this by interviewing a person who has the job being analyzed.

**Step 3 – 7:** Determine the frequency, relative importance and learning difficulty for each task using same scoring system as before, and sum the scores.

The following is an example of the task breakdown for the ‘Pest and Disease control’ task area of the job ‘Vegetable Farmer’. The task area ‘Pest and Disease control’ involves several different tasks.

**Completed Task Breakdown Worksheet**

<table>
<thead>
<tr>
<th>Task</th>
<th>Frequency Performed (A)</th>
<th>Importance (B)</th>
<th>Learning Difficulty (C)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pest identification</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Pest counting</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Disease identification</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Selected control methods</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Selected pesticides</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Determine quantities to use</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Determine cost-effectiveness</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td><strong>Using knapsack sprayer</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
<td><strong>9</strong></td>
</tr>
<tr>
<td>Assess effects of control</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Legend**

(A) 1 = seldom  
2 = occasional  
3 = weekly to monthly  
4 = daily to weekly

(B) 1 = marginally important  
2 = moderately important  
3 = extremely important

(C) 1 = easy  
2 = moderate difficult  
3 = very difficult  
4 = extremely difficult

From the scores on Task Breakdown Worksheet we can see that ‘Using a knapsack Sprayer’ is an important action. Using this scoring process helps to focus on limited resources on the tasks, which
are most critical. Those tasks with the highest total scores will be priority elements for training if they correlate with the gap analysis.

**Task Analysis:** Using Job Analysis and Task Breakdown procedures we are able to identify all the individual tasks required to do the job and determine the relative importance of each. By comparing this information to the information obtained through ‘Gap analysis’ we should know what tasks training should focus on. We must now take each important task and break it down into all the individual actions that are requested to accomplish the task. This process is called task analysis. Task analysis is a necessary part of planning a practical training. It will be easier to understand what is meant by task analysis if we distinguish between skills, tasks and actions as follows:

- A skill is the ability to carry out a task
- A task is a job-related activity with a clearly definable purpose
- An action is a component part of a task

Task analysis can be defined as the identification, ordering and examination of all actions, which make up a given task; the results of task analysis are used to plan and conduct training aimed at development of skills. Before starting a task analysis the trainer must be sure he/she knows what the task is. He/she can make this clear by writing down the following things:

- The output of the task
- Who carries it out
- The circumstances under, which the task is carried out.

If writing the things down does not clarify what the task is, the trainer should ask himself/herself---- is this perhaps two or more tasks? Having sorted out the nature of the task, the trainer should check that it is relevant to the job of the person (farmer) being trained. Once the task is clearly identified, it is necessary to identify and put in order all the actions, which make up the task. This can only be done by careful observation of somebody who is already skilled in that task. Do not try and do this form memory – you will certainly miss some of actions. As you watch the person carrying out the task, divide the activity into the smallest possible steps; the more detailed the analysis is, the more useful it will be when you come to conduct the training. Once the analysis is complete, it should be written down. You can do this using an Action/Steps Listing Worksheet. The following is an example of the action/step list for the task ‘Using knapsack sprayer’:

**Completed Action/Step Listing Worksheet**

<table>
<thead>
<tr>
<th>Job:</th>
<th>Vegetable Farmer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Area:</td>
<td>Pest and Disease Control</td>
</tr>
<tr>
<td>Task:</td>
<td>Using a knapsack sprayer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTION</th>
<th>STEPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action 1</td>
<td>Checking equipment</td>
</tr>
<tr>
<td>Steps</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>Clean tank</td>
</tr>
<tr>
<td>1b</td>
<td>Examine/clean nozzle</td>
</tr>
<tr>
<td>1c</td>
<td>Pressure test</td>
</tr>
<tr>
<td>Action 2</td>
<td>Calibration</td>
</tr>
<tr>
<td>Steps</td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>Determine area to be sprayed</td>
</tr>
<tr>
<td>2b</td>
<td>Mark and measure test area</td>
</tr>
<tr>
<td>2c</td>
<td>Test run with water</td>
</tr>
<tr>
<td>2d</td>
<td>Calculate water used for test area</td>
</tr>
<tr>
<td>2e</td>
<td>Calculate number of tanks for total area</td>
</tr>
<tr>
<td>2f</td>
<td>Read label</td>
</tr>
<tr>
<td>2g</td>
<td>Calculate chemical per tank</td>
</tr>
<tr>
<td>Action 3</td>
<td>Mixing</td>
</tr>
<tr>
<td>Steps</td>
<td></td>
</tr>
<tr>
<td>3a</td>
<td>Safety precautions</td>
</tr>
</tbody>
</table>
Action Analysis: Now that you have decided the tasks, for which it is important to provide training, (in our example: ‘Using a knapsack sprayer’), you should now analyze the relative importance of each ‘action’ you have identified that is required to perform the task. This will help to focus training time and attention on the more difficult and important actions. This analysis is again similar to what you have done so far in evaluating activity areas and tasks. However, this time all individual actions will be required each time the task is carried out so we do not need to consider ‘frequency’ in our assessment.

Step 1: Take several “Action Worksheets” and write the name of a task at the top of each. The tasks should be the ones that you identified from the task analysis worksheet as having high scores. Each of these forms will be used for breaking down and analyzing each of the tasks identified in the Task Breakdown.

Step 2: Identify all the specific actions required to perform the task. Write one action on each line of the “Action Breakdown Worksheet”. Again you should do this by interviewing a person who has the job being analyzed.

Step 3 – 7: Determine the frequency, relative importance and learning difficulty for each task using the same scoring system as before, and sum the scores.

The following is an example of action analysis for the actions required in completing the task ‘Using a knapsack sprayer’ from the ‘Pest and Disease Control’ activity area of the job ‘vegetable farmer’.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>STEPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3b</td>
<td>Suitable measuring instrument</td>
</tr>
<tr>
<td>3c</td>
<td>Accurately of measurement</td>
</tr>
<tr>
<td>3d</td>
<td>Stirring</td>
</tr>
<tr>
<td>4b</td>
<td>Face and head</td>
</tr>
<tr>
<td>4c</td>
<td>Feet</td>
</tr>
<tr>
<td>4d</td>
<td>Body</td>
</tr>
<tr>
<td>5a</td>
<td>Pressure control</td>
</tr>
<tr>
<td>5b</td>
<td>Pace/speed</td>
</tr>
<tr>
<td>5c</td>
<td>Nozzle height/angle</td>
</tr>
<tr>
<td>5d</td>
<td>Coverage</td>
</tr>
<tr>
<td>6a</td>
<td>Disposal of waste</td>
</tr>
<tr>
<td>6b</td>
<td>Cleaning sprayer</td>
</tr>
<tr>
<td>6c</td>
<td>Storing chemical</td>
</tr>
<tr>
<td>6d</td>
<td>Washing self</td>
</tr>
</tbody>
</table>
Completed Action Analysis Worksheet

Job: Vegetable Farmer
Activity Area: Pest and disease control
Task: Using a knapsack sprayer

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Importance (A)</th>
<th>Learning Difficulty (B)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking equipment</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Calibration</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Mixing</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Protection</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Using sprayer</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Finishing</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Legend

(A)  
1 = marginally important  
2 = moderately important  
3 = extremely important  
4 = extremely difficult

(B)  
1 = easy  
2 = moderately difficult  
3 = very difficult  
4 = extremely difficult

This analysis allows you to identify, which actions will be require the most teaching time. That is those, which are the most difficult to learn. In this example all actions are considered extremely important but they vary in learning difficulty. We can see that ‘Calibration’ and ‘using the sprayer’ will take more time to learn and will require more lesson preparation and teaching skills.

Step Analysis

If there are large number of steps required to complete an action it will be beneficial to analyze the learning difficulty of each step. This will help in course planning. This analysis is again similar to what you have done so far in assessing activity areas, tasks and actions. However, this time all individual steps will be required to complete the action so it is only necessary to assess learning difficulty.

Step 1: Take a “Step Analysis Worksheet” and write the name of the action at the top.

Step 2: List all the steps required to complete the action. Write one step on each line of the “Step Analysis Worksheet”.

Step 3: Estimate the difficulty of learning to perform the work required in each step. Use the following scale.

1 = easy
2 = moderately difficult
3 = very difficult
4 = extremely difficult

The following is an example of Step analysis for Action ‘Using sprayer’, contained in the Task ‘Using a knapsack sprayer’, from the Activity Area ‘Pest and Disease control’, of the job ‘vegetable farmer’.
**Completed Step Analysis Worksheet**

Job: Vegetable farmer  
Activity Area: Pest and disease control  
Task: Using a knapsack sprayer  
Action: Using sprayer

<table>
<thead>
<tr>
<th>Step</th>
<th>Learning Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure control</td>
<td>3</td>
</tr>
<tr>
<td>Pace/speed</td>
<td>2</td>
</tr>
<tr>
<td>Nozzle height</td>
<td>2</td>
</tr>
<tr>
<td>Coverage</td>
<td>3</td>
</tr>
</tbody>
</table>

*Legend:*  
1 = easy  
2 = moderately difficult  
3 = very difficult  
4 = extremely difficult

This information will help in training course and lesson planning.

**BLANK WORKSHEETS:**

i) **Job Analysis Worksheet**

**Job __________________**

<table>
<thead>
<tr>
<th>ACTIVITY AREA</th>
<th>Frequency Performed (A)</th>
<th>Importance (B)</th>
<th>Learning Difficulty (C)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

*Legend*  
(A)  
1 = seldom  
2 = occasional  
3 = weekly to monthly  
4 = daily to weekly  
5 = daily basis

(B)  
1 = marginally important  
2 = moderately important  
3 = extremely important

(C)  
1 = easy  
2 = moderate difficult  
3 = very difficult  
4 = extremely difficult
ii) Task Breakdown Worksheet

<table>
<thead>
<tr>
<th>TASKS</th>
<th>Frequency Performed (A)</th>
<th>Importance (B)</th>
<th>Learning Difficulty (C)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Legend

(A) (B) (C)
1 = seldom 1 = marginally important 1 = easy
2 = occasional 2 = moderately important 2 = moderate difficult
3 = weekly to monthly 3 = extremely important 3 = very difficult
4 = daily to weekly                      4 = extremely difficult
5 = daily

iii) Action/Step Listing Worksheet

<table>
<thead>
<tr>
<th>ACTION</th>
<th>STEPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend

(A) (B)
1 = marginally important 1 = easy
2 = moderately important 2 = moderate difficult
3 = extremely important 3 = very difficult
4 = extremely difficult

iv) **Action Analysis Worksheet**

Job _____________________
Activity Area __________________
Task _______________________

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Importance (A)</th>
<th>Learning Difficulty (B)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**

(A)  
1 = marginally important  1 = easy  
2 = moderately important  2 = moderate difficult  
3 = extremely important  3 = very difficult  
4 = extremely difficult  

v) **Step Analysis Worksheet**

Job _____________________
Activity Area __________________
Task _______________________
Action ______________________

<table>
<thead>
<tr>
<th>Step</th>
<th>Learning Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**

(A)  
1 = easy  
2 = moderately difficult  
3 = very difficult  
4 = extremely difficult  

This information will help in training course and lesson planning.
Conducting a Gap Analysis

It is to determine to what extent the trainee can currently perform the tasks required. What the trainee, the farmer, is currently able to do must be compared to what is required to adequately perform the task. There is a “gap” when the task requires more skills and knowledge than the trainee currently possesses. It is this “gap” that must be corrected through training. The Job analysis provides with a comprehensive understanding of what is required to adequately perform the various tasks the job requires. Gap Analysis tells what the trainee, the farmer, is currently able to do.

Procedure for conducting Gap Analysis

The following steps provide a guide to applying Gap Analysis techniques to estimate the skill levels of trainees. The process is general in nature and should be adapted to your specific needs and situation. This technique should first be applied to proficiency analysis of tasks identified in the Task Breakdown Worksheets. This is done using a Gap Analysis Worksheet for “Tasks” (a blank form is given at the end of this section).

Step 1: List the ‘tasks’ that were identified on the Task Breakdown Worksheet onto the Gap Analysis Worksheet. First list the task with the highest score determined during the Task Breakdown exercise. List the remaining tasks in descending order according to their score. This will focus analysis on the most critical tasks.

Step 2: rate each task in terms of the trainees’ current proficiency to complete it. This should be done on a scale of 1 to 5, with the following scale:

1 = cannot complete any part
2 = can complete less than half the task
3 = can complete more than half but less than the total
4 = can complete the entire task but takes too long
5 = can complete the task accurately and efficiently.

Step 3: review the proficiency ratings and tick those tasks that appear to have low proficiency. Low proficiency means that there is a gap between what is desired and what the situation is currently.

Step 4: Decide if the “gap” can be decreased or removed through training. Not all deficiencies can be corrected by training. This step provides a check and balance against assuming that the training program can and should include every task that has the gap. For example, if a task requires that a complex chemical analysis be completed, it is very possible that training will not be effective. This task requires general ability in science, it requires sophisticated apparatus, and it requires controlled conditions. If these needs are not allowed, training will not be an appropriate solution for closing the proficiency gap.

Step 5: Discuss the results of the gap analysis and the proficiency ratings and the indication of gaps with one or more key people involved in the training activity. This might involve a Subject Matter Specialist who has an involvement in the training.

The following is an example of a completed Gap Analysis Worksheet (Tasks). Note that the time the tasks are listed according to the scores indicated in the Task Breakdown Worksheet example. The list begins with the task that showed the highest scoring and lists them in descending order.
## Completed Gap Analysis Worksheet (Tasks)

**Job:** Vegetable Farmer  
**Activity Area:** Pest and disease control

<table>
<thead>
<tr>
<th>(Score) Tasks</th>
<th>Proficiency rating 1 2 3 4 5 (see legend below)</th>
<th>✓ or X for proficiency</th>
<th>Can the problem be addressed by training? ✓ yes, or X no</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9) Using a knapsack sprayer</td>
<td>1</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(8) Pest identification</td>
<td>3</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(8) Determine cost-effectiveness</td>
<td>2</td>
<td>(X)</td>
<td>(X)</td>
</tr>
<tr>
<td>(8) Disease identification</td>
<td>2</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(8) Assist effects of control</td>
<td>4</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(7) Select pesticides</td>
<td>3</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(7) Determine quantities to be use</td>
<td>4</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(6) Pest counting</td>
<td>4</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(5) Select control methods</td>
<td>5</td>
<td>(✓)</td>
<td>(✓)</td>
</tr>
</tbody>
</table>

**Legend:**  
1 = cannot complete any part  
2 = can complete less than half the task  
3 = can complete more than half but less than the total  
4 = can complete the entire task but takes too long  
5 = can complete the task accurately and efficiently

## Procedure for doing Gap Analysis (Actions)
You should complete Gap Analysis Worksheets (Actions) to help you determine proficiently rating you will give for each task in the Gap Analysis Worksheet (Tasks).

**Step 1:** List the ‘actions’ that were identified on the Actions Analysis Worksheet onto the Gap Analysis Worksheet (Actions). First list the actions with the highest score determined during the Action Analysis exercise. List the remaining actions in descending order according to their score.

**Step 2:** Rate each action in terms of the trainees’ current proficiency to complete it. This should be done on a scale of 1 to 5, with the following scale:

1 = cannot complete any part  
2 = can complete less than half the steps required  
3 = can complete more than half but less than the total  
4 = can complete the entire steps but takes too long  
5 = can complete all the steps accurately and efficiently

**Step 3:** Use this information to help in deciding on proficiency score for the task in the Gap Analysis Worksheet (Tasks).

## Completed Gap Analysis Worksheet (Actions)

**Job:** Vegetable Farmer  
**Activity Area:** Pest and disease control  
**Task:** Using a knapsack sprayer

<table>
<thead>
<tr>
<th>(Score) Actions</th>
<th>Proficiency rating 1 2 3 4 5 (see legend below)</th>
<th>✓ or X for proficiency</th>
<th>Can the problem be addressed by training? ✓ yes, or X no</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7) Calibration</td>
<td>1</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(6) Using sprayer</td>
<td>2</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
<tr>
<td>(5) Checking equipment</td>
<td>1</td>
<td>(X)</td>
<td>(✓)</td>
</tr>
</tbody>
</table>
## Module 7: Techniques of Identifying Training Needs Assessment of Farmers

### Gap Analysis Worksheet (Tasks)

**Job** __________________________

**Task** __________________________

<table>
<thead>
<tr>
<th>(Score) Actions</th>
<th>Proficiency rating</th>
<th>✔ or X for proficiency</th>
<th>Can the problem be addressed by training?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) Mixing</td>
<td>2</td>
<td>(X)</td>
<td>✔</td>
</tr>
<tr>
<td>(4) Protection</td>
<td>5</td>
<td>(X)</td>
<td>✔</td>
</tr>
<tr>
<td>(4) Finishing</td>
<td>4</td>
<td>(X)</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Legend:**
1 = cannot complete any part  
2 = can complete less than half the steps required  
3 = can complete more than half but less than the total  
4 = can complete the entire steps but takes too long  
5 = can complete all the steps accurately and efficiently

### Gap Analysis Worksheet (Actions)

**Job** __________________________

**Activity Area** __________________________

**Task** __________________________

<table>
<thead>
<tr>
<th>(Score) Actions</th>
<th>Proficiency rating</th>
<th>✔ or X for proficiency</th>
<th>Can the problem be addressed by training?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
1 = cannot complete any part of the task  
2 = can complete less than half the task  
3 = can complete more than half but less than the total  
4 = can complete the entire task, but takes too long  
5 = can complete the task within the time standard
4. Other methods of identifying training needs

There are other methods to identify training needs and the most appropriate is selected to suit particular situation. The method chosen for identifying needs for farmers may well be different than that chosen to identify needs for DAs/supervisors. Some of the methods are described in the following sections:

I. **PRA in Extension**: PRA in extension is a technique by which several information including problems about farming community is collected. Some of the tools include interviewing key informants, reviewing secondary data sources, mapping exercises, and conducting semi-structured interviews with individual or group of farmers.

II. **DA Extension Diary**: The DAs extension diary provides a means of identifying farmer problems and their information needs, and also shows areas where training is required.

III. **Knowledge, Attitude and Practice Studies**: Surveys of the knowledge, attitude and practice of farmers undertaking a particular task help to identify training needs. This is usually done by means of questionnaires with a range of questions to be asked.

IV. **Interviews with Farmer**: Interviewing an individual or group of farmers help determine their training needs. Interviews have the merit of high farmer involvement and the capacity for training to be more directly aimed toward an individual.

V. **Observations of Behavior**: Direct observations of a farmer behavior can be made by DAs/supervisors. Weakness might be spotted during this process and suitable training is organized. For example, the farmer is not effective in talking to a group of farmers about a particular extension message that indicates a possible training need on the delivery of extension message.

VI. **Skills Tests**: Proficiency test can be applied to manual skills and basic job knowledge. Skills testing permits elimination of meaningless repetition of training for skills previously acquired, whilst also revealing the scale of the remaining training task.

VII. **Policy Statements**: Some training needs are identified by implementing policies being promoted. For example, the BoA or woreda is promoting environmentally sound extension messages and these needs to be reflected in the training programs.
11 MODULE 8: PREPARING SIMPLE AND ILLUSTRATIVE TRAINING LESSON PLANS FOR FARMERS

Module Outline

1. Objectives of the Module
2. Introduction and rationale
3. Designing simple training lesson plans for farmers
4. Implementation phase of farmer’s training
5. Small Group Works and Presentations on training lesson plans

1. Objective of the Module
By the end of this module, participants will be able to:

- Understand the training cycle for planning of training events for farmers
- Learn the art of developing simple training lesson plans for farmers on improved irrigation practices based on the farmers skills/knowledge gaps in irrigation
- Know their specific roles and functions in conducting practical training for farmers involved in SSI and MI schemes

2. Introduction and Rationale
According to research, there are three important requirements for successful farmer training, which help involve interacting between the trainer and trainee.

- Involvement of trainees (farmers)
- Purpose and relevance
- Feedback

Involvement of Farmers: The learner, the farmer should be ‘active’ in the process of learning. This can be achieved by allowing discussion, by asking questions, by encouraging trainees to ask questions, and by constantly relating the subject matter (topic of training course) to the interests and environment of the audience.

Purpose and Relevance: The subject matter should be problem-oriented. The trainees must be told at the beginning of the lesson what the objectives of each lesson are, and they must understand why it is important to them.

Feedback: The teaching methods used, should encourage a response from the trainees. By asking the trainee questions, and inviting them to comment on the subject matter, it will be possible to judge how well they understand the trainer (teacher), and how relevant the information is. In this way, the presentation can be adjusted to make sure that trainees are learning something, and that what they are learning is useful to them.
11. **Module 8: Preparing Simple and Illustrative Training Lesson Plans for Farmers**

### The Training Cycle

A training cycle is a model that represents a systematic approach to training and development. It is a basic guide for those who are training organizers to know the main process associated with planning, running and evaluating a training session for farmers. This cycle is more applicable to the DAs and extension supervisors to run training event for the farmers either in Farmer Field Schools, schemes or in farmer training centre (FTC) settings. The key steps are:

- Training Needs Analysis
- Designing training/lesson plan
- Implementation of training course
- Course Evaluation
- Post-Training Evaluation

The effectiveness of any of these steps depends on how thoroughly the previous stages have been carried out. Good planning is the key to effective training demonstration. Training event organizer or trainer should be careful while planning training.

We have discussed earlier about training needs assessment, now based on the analysis of the farmers training needs, we will develop training lesson plans for them to implement the training event mostly practical exercises in the field or schemes.

### 3. Designing simple training lesson plans

A good training program includes suitable lesson plans relating to particular training topic, designed to train the farmers. Generally, a lesson plan is a description of a proposed teaching activity in the form of written, practical and demonstration. Lessons plans should be prepared for all lessons whether it is class teaching or field exercise or demonstration. The preparation of lesson plans helps to ensure that training activities are purposeful and well organized. Without lesson plans, training can easily become irrelevant, incomplete and ineffective. The steps involved in preparing a lesson plan are as follows:

- Establish a clear objectives for the lesson
- Select the subject matter, which is required to achieve that objective
- Structure the subject matter so that it is relevant, logical and educational
- Selecting teaching methods, which are appropriate to for the achievement of that objective or the selected subject matter
- Decide on what equipment and materials will be needed to carry out these subjects
- Allocate the time required to carry out those methods

The format for a lesson plan helps DAs/supervisors in conducting successful training for the farmers. The format is divided into a number of sections, which are as follows:
11. Module 8: Preparing Simple and Illustrative Training Lesson Plans for Farmers

- Details of proposed training session at which the lesson will be presented (dates and location). If it is in FTC than mention at FTC or if is in other place, like village or other center, than mention that place.
- An education objective (very important).
- Details of the requirements for carrying out the lesson/training program (time, visual aids and demonstration materials).
- An outline of the lesson (broken down into key technical information teaching and assessment methods and teaching aids).

DA should seek opinion on the lesson plan from respective SMSs or extension supervisors before it is finalized. SMSs or supervisors should contribute on the plan to improve it. An example of a completed lesson plan is shown below:

Completed Lesson Plan (an example)

PREPARED BY:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ato Tilahun Molla</td>
<td>DA</td>
<td>15 May 2007</td>
</tr>
</tbody>
</table>

PROPOSED TRAINING SESSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 6 June 2007</td>
<td>FTC in Chamo kebele, Goncha</td>
</tr>
</tbody>
</table>

EDUCATIONAL OBJECTIVE:
By the end of this training the farmer will be able to:

1. Explain the reason for and correctly perform a germination test for wheat when provided with seed and other appropriate materials. The test should be carried out with no errors.

REQUIREMENTS

<table>
<thead>
<tr>
<th>Time</th>
<th>3 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Aids:</td>
<td></td>
</tr>
<tr>
<td>Handouts</td>
<td></td>
</tr>
<tr>
<td>Flipcharts</td>
<td></td>
</tr>
<tr>
<td>To be prepared in advance</td>
<td></td>
</tr>
<tr>
<td>Demonstration materials:</td>
<td></td>
</tr>
<tr>
<td>Wheat seed (2 kg)</td>
<td></td>
</tr>
<tr>
<td>Cotton Cloth (2 sq.m) or blotting paper</td>
<td></td>
</tr>
<tr>
<td>Saucers or Petri dish (7)</td>
<td></td>
</tr>
<tr>
<td>Some water</td>
<td></td>
</tr>
<tr>
<td>One saucer or Petri dish with seed already germinated (prepared 5 days before)</td>
<td></td>
</tr>
</tbody>
</table>
## LESSON OUTLINE

<table>
<thead>
<tr>
<th>Key Technical Information</th>
<th>Teaching/Assessment Method</th>
<th>Teaching Aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction to germination test: What it is and how it is useful</td>
<td>Mini-lecture</td>
<td>Flipcharts</td>
</tr>
<tr>
<td>2. Procedure for carrying out test:</td>
<td>Method demonstration</td>
<td>Handout Demonstration materials</td>
</tr>
<tr>
<td>a) sampling</td>
<td>Skill practice in group of 3</td>
<td></td>
</tr>
<tr>
<td>b) count 100 seeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) arrange on cloth on rows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) apply water and store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) wait 5 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) count germinated seeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) calculate germination rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Conclusions to be drawn from the results of germination tests</td>
<td>General discussion</td>
<td></td>
</tr>
<tr>
<td>4. Summary</td>
<td>Mini-lecture</td>
<td>Flipchart</td>
</tr>
<tr>
<td></td>
<td>Question and answers</td>
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</tbody>
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11. **Module 8: Preparing Simple and Illustrative Training Lesson Plans for Farmers**

**Planning a Lesson/Training Program**

- **Target Group**
- **Training needs**
- **Topic**
- **Aim**
- **Title**
- **Objectives**
- **Evaluation**
- **Session structure and**
  - **Introduction**
    - Overview – what is coming?
    - Motivation – why important
  - **Development**
    - Material presented in a logical sequence
    - Selection of appropriate teaching approaches and communication aids
  - **Conclusion**
    - Put session into a general
    - Follow-up to lead into future application

**Educational objectives**
An educational objective is a statement, which describes the expected behavior of the trainee. That is to say, it describes what the trainers will be able to do as a result of the training. This behavior should be described in measurable terms so that the trainer will be able to accurately compare what is expected with the actual performance of the trainee. There are three most important reasons why trainers should prepare such objectives:

- An objective makes sure that each lesson has an intended output. As a result it can be seen if the output is compatible with the general purpose of the lesson; in the case of farmer training it will be possible to decide if a proposed lesson is like to contribute to the improvement of his farm or agricultural products.
- An objective is the essential starting point for lesson planning.
- A measurable objective makes it possible to evaluate training. By writing objectives the trainer has established criteria, which will help him/her to judges; the progress that trainees
An educational objective should have a number of components. These can easily be remembered by the formula:

\[ A + B + C + D, \]

where

\[
\begin{align*}
A &= \text{Audience} \\
B &= \text{Behavior} \\
C &= \text{Condition} \\
D &= \text{Degree}
\end{align*}
\]

**Audience:** This is simply a term meaning the trainees. In most cases, this will be farmers.

**Behavior:** This is the activity, which the trainee should be able to carry out because of the proposed lesson. This should be very specific for example:

I. Identify the pests of the vegetable crops;
II. Calculate the number of trees in a given area;
III. Demonstrate a daily maintenance check of a water pump;
IV. Recommend fertilizer rates for tomatoes in agro-ecological zone 12

**Conditions:** These are the circumstances under which the trainee should be able to carry out the stated activity. For example, activities listed under Behavior may have the following conditions:

I. When shown a set of photographs;
II. When provided with details of the crop rotation and fertilizers, which are available;
III. When given of spacing and provided with a pocket calculator;
IV. When provided with a real pump, an appropriate set of tools and a can of engine oil

**Degree:** This is the level of ability, which the trainee is expected to demonstrate when carrying out the stated activity. There are three common types of criteria used to establish this degree:

I. Time limit: the activity has to be completed within a specified amount of time;
II. Minimum number of correct responses: if the activity has to be repeated then it must be correct for at least the given number of repeats;
III. Amount of acceptable deviation from a standard: the activity must be completed without reaching a specified level of error.

**Trainers Checklist for Planning a Lesson/Training**

This is the checklist of items that you (the trainer) should check as part of planning a lesson for conducting training:

1) Have you written objectives that state what you will teach and WHY the participant farmers need it?
2) Are your aims and objectives closely matched to that training need of your TARGET GROUP, the farmers?
3) Will any of your participants’ practical experience of the subject, which can be used for the benefit of the other farmers?
4) Have you planned how you will motivate the participants by involving them in the group work in the training lesson?
5) Have you written down the questions you will use to involve the participants in the lesson?
6) Will you tell participants the title of the lesson and give an overview of the lesson?
7) Have you planned how to involve participants in the lesson?
11. Module 8: Preparing Simple and Illustrative Training Lesson Plans for Farmers

8) Have you planned what notes the participants will make?
9) Can you use handouts in your lesson?
10) Will you use a range of visual aids to increase participant interest in your lesson?
11) Are you trying to relate your lesson to agricultural practice wherever possible?
12) Have you planned how you will use CHALKBOARD?
13) Do your participants really need all the information in your lesson?
14) Have you estimated the TIME each part of the lesson will take?
15) Have you written down questions you will ask the participants, to TEST whether the participants have learnt what you intended?
16) Will you tell participants how the lesson will be followed up in future practical or theory lessons?
17) Will you CHECK all the training aids you will use are available and working?

If the answer to most of these questions is YES then you are more likely to motivate your participant farmers, keep them interested and achieve your objectives, helping farmers to learn and build their capacities.

4. Implementation phase of training

Once the lesson-planning phase of a training program is complete, then it is time to implement the course. Implementation is the point where a trainer activates the training plan, or it is the process of putting a training program into operation.

The first step towards implementing a training program is publicity, notifying the targeted trainees, the farmers, for their active participation in the course. The trainer, the DA, organize the preparation of training brochures that contain course descriptions, lesson handouts, and the program in length. The next step is to arrange available resources such as sufficient funds for the course and facilities for food, lodging, transportation, and recreation. All these resources need to be well managed and coordinated to run the program smoothly.

In order to make the training event successful, a variety of training methods should be used. The most commonly used methods include:

- **Instructor presentation**: The trainer orally presents new information to the trainees, usually through lecture. Instructor presentation may include classroom lecture, seminar, workshop, and the like.
- **Group discussion**: The trainer leads the group of trainees in discussing a topic.
- **Demonstration**: The trainer shows the correct steps for completing a task, or shows an example of a correctly completed task such as cultivation techniques, irrigation scheduling, and vaccination to poultry and livestock, pest and disease control, etc.
- **Assigned reading**: The trainer gives the trainees reading assignments that provide new information.
- **Exercise**: The trainer assigns problems to be solved either on paper or in real situations related to the topic of the training activity.
- **Case study**: The trainer gives the trainees information about a situation and directs them to come to a decision or solve a problem concerning the situation.
- **Role play**: Trainees act out a real-life situation in an instructional setting.
• Field visit and study tour: Trainees are given the opportunity to observe and interact with the problem being solved or skilled being learned.

Course evaluation phase
This section broadly presents the sample ToT Training Plan on “Participatory Irrigation Extension Management Skills”, showing how to conduct a course evaluation using related formats. Please look and follow the formats.

Course completion report
Reporting is one of the key components in training system where the outcome of an event is recorded and documented for future reference. It helps in future planning of the event by taking necessary corrective measure including the opinions of the trainees. A training report is usually prepared based on evaluation of the training. In general, some of the important elements makes up for writing the course completion report includes:

• executive summary
• introduction
• background
• purposes
• limitations
• course description
• methods
• display of sample/ specimen
• instrumentation
• evaluation results
• recommendations

In the context of farmers’ training, conducted by the DAs or extension supervisors, a standard reporting format is recommended.