Experiential and Participatory Learning Methodology in Organic Cotton production

Related to the LoA PR. NR. 42592 binding ICEA to FAO

WP3

Development of an Experiential Participatory Learning Methodology on Soil Fertility Management

In collaboration with:

Istituto per la Certificazione Etica ed Ambientale
Bologna, July 2010
The All ACP Agricultural Commodities Programme

This work package on the development of an experiential participatory learning methodology on soil fertility management has been developed in the context of the All ACP Agricultural Commodities Programme.

The EU-funded All ACP Agricultural Commodities Programme (AAACP) is an interagency initiative being implemented by the Food and Agriculture Organization of the United Nations (FAO), the Common Fund for Commodities (CFC), the International Trade Centre (ITC), the United Nations Conference on Trade and Development (UNCTAD) and The World Bank. This four-year programme will end in December 2011.

The overall objective of the AAACP is to reduce income vulnerability and improve the livelihoods of producers dependent on agricultural commodities - in the Africa, Caribbean and Pacific regions (ACP) - by building the capacity of actors along commodity chains to develop and implement sustainable value chain strategies.

Within FAO, the AAACP is being implemented by the Trade and Markets Division (EST), the Rural Infrastructure and Agro-Industries Division (AGS), and the Plant Production and Protection Division (AGP). Each division has the responsibility of the implementation of the following four outcomes:

1. Improve the capacity of chain actors to develop and implement national commodity strategies
2. Improve access to markets, factors of production and services
3. Develop and enhance access to instruments to reduce producers’ income vulnerability
4. Capitalize on the synergies of International Organizations, EU and ACP actors in the area of agricultural commodities
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Introduction

Work package 3 aims at developing an Experiential Participatory Learning Methodology on soil fertility management, based on the experiential learning approach- defined as the process whereby knowledge is created through the transformation of the experience of the learner who is at the centre of the learning process (Kolb, 1984).

This methodology will allow an effective skill transfer, facilitating conceptual and attitudinal development, and encouraging appropriate changes in farmers' behaviour.

The present report will base the development of the methodology on the outcome of WP2 regarding problems in soil fertility management among BioRe farmers in Meatu district, Tanzania. It starts with an introduction of the soil as a product built out of layers and shaped by human interactions (Chapt. 1) and a quick overview on the Experiential and Participatory Learning. The next chapter summarizes the outcomes of the previous learnings between the actors of the present project and the analyses of the current problem of decreasing soil fertility on organic cotton farms. Chapter 3 introduces the theory of farmer empowerment through experiential and participatory learning (EPL). This theory represents the core concept proposed to induce a change on attitudes and actions needed by farmers as well as extensionist and trainers from bioRe, in order to achieve the goal of improving soil fertility and productivity.

This theory of farmer empowerment builds the base for the learning methodology, which is described within its six steps in Chapter 4.

The proposed EPL process shows the various steps and time spans required in order to move from the problematic AS-IS situation towards a required process of TO-BE. Considering that soil fertility is not just a result of natural processes, but can be influenced by human interaction and therefore by management, the time available by the project for this change management is too short compared to the time by which first visible and tangible results on improved soil fertility can be measured (at least 2-3 years). It shall however provide a methodology with generic descriptions which should easily be applicable also for other projects dealing with soil fertility improvement on area and value-chain level.
"The Concept"

1 The Soil fertility and Experiential Learning

1.1 The concept

The preliminary study of the situation on soil fertility of the farmers working with bioRe Tanzania shows a high interest in changing patterns and behaviour, but indicates limited perceptions and ineffective ways of learning and motivation (see WP2 report; 26. Feb. 2010) in order to actively influence soil fertility, an essential base of life and the ground of human civilization.

In order to give adequate tools to the farmers to improve their soil fertility management, we thought that the best and most effective learning approach is the experiential and participatory one (EPL. Experiential and Participatory Learning), which is developed hereby and can be defined as “process whereby knowledge is created through the transformation of the experience of the learner who is at the centre”. EPL puts the learner in a condition of grasping both conceptual and real-life realities in order to deduct the relevant attitudes and actions in order to change a given situation. In contrast to a top-down and linear teaching from trainer to farmer, EPL puts the farmer-learner into the driver seat and assists him/her in finding the way out.

1.2 The Soil fertility and EPL: a result of organized interactions

The agricultural soil is a product of evolution and human interaction. The soil should be seen as Natural capital to be left to next generations. Sustainable agriculture depends and requires fertile soils. Decreasing soil fertility should be considered as a problem, mostly causing social and economic damages to the farming community.

The farmer is the most important actor in influencing the fertility of the arable soils. Her and his perceptions, motivation and means are decisive for the soils.

Soil fertility, from the agronomic point of view, is an asset which can be highly influenced by practice. Every soil is unique and every farmer is unique and, equipped with specific tools and skills. His and her surroundings- cultural, social, technical, institutional and technological- are critical in shaping the concrete attitudes and practices of the farmer towards his/her soil.
Fig. 1: Characteristics of fertile soils

**Characteristics of Fertile Soils**

Attributes of fertile soils include the following among others:

- Adequate supply of nutrients in the correct proportion resulting in sustained high crop yields.
- Good rooting depth.
- Good aeration.
- Good water holding capacity.
- Presence of soil organisms e.g., earthworms.
- Presence of adequate amounts of organic matter
- Absence of soil-borne pests and diseases
- Right pH. Low pH and or high pH may lead to unavailability of certain nutrients in the soil e.g., Phosphorus fixation at low pH.

Using the image of the layers will help in making the “invisible sub-soil” visible, and therefore manageable. It will help the learner in visualizing the concepts of nutrients and their flow in time and space (soil, plant, water). And the understanding of the top layers of soil will hopefully show the possibilities of the farmer in increasing the chances of pro-actively improving productivity and income in a sustainable way. The understanding of the soil will grow with time and exposure, step-by-step, and layer by layer.

The sound and pragmatic perception of reality is a precondition for change. The reality of soil is always local and contextual. The farmer is the best suited person in understanding this realities and how best to use his resources in order to influence it towards fertility.

Fig. 2: Soil layers

**O Horizon** - The top, organic layer of soil, made up mostly of leaf litter and humus (decomposed organic matter).

**A Horizon** - The layer called topsoil; it is found below the O horizon and above the E horizon. Seeds germinate and plant roots grow in this dark-colored layer. It is made up of humus (decomposed organic matter) mixed with mineral particles.

**E Horizon** - This eluviation (leaching) layer is light in color; this layer is beneath the A Horizon and above the B Horizon. It is made up mostly of sand and silt, having lost most of its minerals and clay as water drips through the soil (in the process of eluviation).

**B Horizon** - Also called the subsoil - this layer is beneath the E Horizon and above the C Horizon. It contains clay and mineral deposits (like iron, aluminum oxides, and calcium carbonate) that it receives from layers above it when mineralized water drips from the soil above.

**C Horizon** - Also called regolith: the layer beneath the B Horizon and above the R Horizon. It consists of slightly broken-up bedrock. Plant roots do not penetrate into this layer; very little organic material is found in this layer.

**R Horizon** - The unweathered rock (bedrock) layer that is beneath all the other layers.
The Diagram below (Fig.3) tries to visualize the relations and links of the key elements, which should be understood by both, facilitator/trainer and farmer. It indicates that soil is built from bottom to top, with the help of infinite biodiversity and microbial life. In the past, traditions and rituals were the key institutions in educating the farmers, while in EPL, theories, training modules and facilitation processes are used.

The model described will be implemented in practical sessions, and considering the efficiency of the methodology, many acres of arable land and pasture will improve their fertility and provide more products and income to the farmer’s households.

Fig. 3: Structure of EPL on Soil Fertility (source: G. Nicolay, FIBL 2010)

Remarks:
- A to E may be conceived as layers (similar as the soil profiles, described in layers and the A-profile building the top)
- Layer D has been clarified during WP2
- The Theory (Layer C) needs approval by all stakeholders then the base for the next layers (B, A) will be ready
- All these boxes form a dynamic system
- The “fertile soil” is a result of societal organization, determining the skills of the farmers and their attitude towards the fragile soil.
Chapter 2

“*The bottom line*”

1 What we have to retain from the existing situation

The WP2 Report predisposed in the previous phase, provides the base and starting point.

Below just some of the most striking findings which need to be addressed:
- As land is owned by families and not by the community, there is an opportunity to convince farmers investing in the fertility of their own farms.
- Thorough debate should be carried out with farmers. All of them are aware of the advantages of improved farming techniques but very few are adopting them.
- Farmers seem to be still in the position of recipient, receiving advices and training, but not taking action for the improvement of the cropping system. There is still a gap between knowledge of agronomic practices and putting this into practice.
- bioRe is certainly offering quality services but maybe the way it is done is perceived again as tedious instructions coming from outside rather than good advice for taking responsibilities and change.

To be discussed with the relevant stakeholders:

a) Suggestions on agronomic practices (WP2, p.22)
b) Suggestions on extension services (WP2, p.23)
c) Analyses of the current bioRe management (WP2, paragraph 1.4.4)
Chapter 3

“The Theory”

1 Empowering Farmers and Extensionists through experiential and participatory learning

The development of a proper Learning Methodology on soil fertility management means designing training for adults which need to take into account that according to Justice and Jamieson (1999) for adults, learning occurs best when:
- it is motivated, not coerced or forced. The participant’s motivation comes from the context, relevance, and involvement level.
- it is conducted as a partnership.
- it involves their primary learning mode and is interactive and experiential. They need to stay engaged, use their senses, their knowledge and skills.

Therefore, a proper learning method should and can aim in empowering the learner by enhancing his/her capacity to master one or more aspects of life. Experiential learning approach offers a response to these considerations and creates the opportunity to help the lead farmers to discover how they can improve their performance and to empower themselves.

We have seen so far that soil fertility is a result of two key processes: a) agronomic/natural, whereby the processes are all happening invisibly for the observer’s eyes, and b) social interaction, including the awareness and knowledge of the farmers involved in land use. Even this process of knowledge creation through learning is invisible, but nevertheless very real. Theories are powerful tools and means to make the invisible visible and understandable and therefore useful for practice. Learning about learning is as important as learning about soil, in order to enhance chances to positively improve sustainable soil fertility practices. If combined under the concept of farmer empowerment, learning and training become indispensable for soil fertility management.

1.1 Introductory notes to Experiential Learning and to a Theory of Empowerment

Experiential Learning Theory (ELT) provides a holistic model of the learning process of adult development, which is consistent with what we know about how people learn, grow, and develop. The theory is called “Experiential Learning” to emphasize the central role that experience plays in the learning process, an emphasis that distinguishes ELT from other learning theories.
Experiential learning theory defines learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984).

The ELT model includes two related modes of grasping experience - Concrete Experience and Abstract Conceptualization - and two related modes of transforming experience - Reflective Observation and Active Experimentation.

In grasping experience some of us perceive new information through experiencing the concrete, tangible, felt qualities of the world, relying on our senses and immersing ourselves in concrete reality. Others tend to perceive, grasp, or take hold of new information through symbolic representation or abstract conceptualization. Similarly, in transforming or processing experience, some of us tend to carefully watch others who are involved in the experience and reflect on what happens, while others choose to jump right in and start doing things. The watchers favour reflective observation, while the others favour active experimentation.

EL approach is a learner-centred approach involving experience followed by a process of reviewing, reflecting and applying what has been learned. Participatory methods keep learners active in the learning process. They are involving and interactive, and they encourage communication and group work. They are action oriented and experience based.

This experiential and participatory approach was chosen to enhance effective skill transfer, to facilitate conceptual and attitudinal development, and to encourage the empowerment of the learner. The experiential learning cycle is especially useful for skill training because most of its techniques are designed to involve the learners in practicing the skill. The experiential model helps people assume responsibility for their own learning because it asks them to reflect on their experience, draw conclusions, and identify applications. Learners ground the lessons in their actual environment by considering the question of what can or should be done differently as a result of the learning experience.

Empowerment of farmers is required in a context, where soil fertility depends on a free choice of the same farmers in order to act correctly and pro-actively. Empowerment is practice, not theory. But without theory, it is hard to communicate. We have considered this theory as integral part of the structure of the PLM, building the ground for the training and extension inputs and processes. The common perception of learner (farmer) and facilitator or "extensionist" (bioRE) on the theory of “Empowerment Through learning” is helpful and even required in order to successfully change the practice towards a self-responsive and farmer-centred approach of change. This method is based on the assumption of a farmer being a professional and expert.

1.2 Create a learning climate

Learning is the key process to aim at, and not just training or technology transfer. The effectiveness of farming practice depends largely on the people directly involved and their actions and attitudes. This is true for small farmers as well as for

1 This change is a key improvement proposed in this methodology
value chains and organizations. The ones interested in boosting learning must first try to create a learning climate, in order to enhance the probability for sustainable learning.

bioRE wants sustainable supply of top quality cotton. The public wants to maintain the soil fertility for current and future generations. Hardly anybody wants degrading soils. But they are a reality. All organizations involved should work close with farmer representatives in order to define the conditions for appropriate learning in order to help them to re-establish the soil fertility to acceptable levels.

The value chains in food and agriculture systems depend on the performance of organizations as well as contracted and independent farmers. The whole value chain has similar learning requirements as an organization. It is only as good as its weakest link. The stronger links have therefore all the interest to assist the weaker players to improve.

People in any organization – and therefore in any well organized value chain - require information, knowledge, skill, vision, and mission to do their best for the organization and the value chain. HRD (human resource development) seeks to provide a package of systems and processes through which these can be cultivated and enhanced among the people forming part of the network of roles in the organization. As a system for the development of personnel in an organization, HRD is generally brought about through a bunch of sub-systems all of which are meant to focus on development of the individuals and groups constituting the social system of the organization. One of these sub-systems is training. Over the years, it has been viewed as the active arm of the top management for preparing the personnel to upgrade their capabilities to meet new organizational challenges. It is not an exaggeration that in the future, the winning organizations will be those that respond quickly to changing conditions, increasing workforce diversity, and addressing the critical issue of training related problems.

An organization like bioRe can be winning against its competitors, when it succeeds in organizing and implementing learning conditions, which bring immediate benefit to the farmers and increase the resilience of their farm land. Training and learning can and should be considered as generic elements in a society and economy which depends more and more on knowledge workers (independently if organized in an enterprise or in a value chain). Without training/learning of farmers, we can hardly expect appropriate skills and attitudes and the required services (food, fibres, ecosystem services).

Development staff like agricultural extension managers who serve the farmers in rural areas by giving technical guidance, require a high degree of motivation and complex skills to deal with farmers and influence their attitudes, habits and practices to adopt new agriculture technologies. The same is valid for lead farmers. New ways of learning are required over the long value chain in order to achieve the various goals of adaptation, change and performance.

1.3 Importance of training and experiential learning in the group

Training aims at specific knowledge, skills, attitudes and behaviour. But to be effective, it has to involve a learning experience, and be planned and designed to
respond to identified needs. The learning experience is the critical outcome of every training conducted, but this can be reached, if the training helps the learner how to learn. The indicator for a successful training is not the amount of detailed information but the amount of induced learning. Course curricula shall help to deal with new situations in a changing environment, from problem identification and analysis to the making and implementation of original solutions. Participative methods, simulation exercises and models, case studies and various group assignments are helpful tools.

For adults, learning occurs best when it involves their primary learning mode and is interactive and experiential. Experiential means that the learner is allowed to make mistakes, so that he/she can try out new ways without taking many risks. The group environment assists this way of experience much better than individual learning. The own strengths and weaknesses are discovered as well as the proper learning style. Day-to-day experience becomes a focus for testing and exploring new ideas and learning becomes an integral part of work itself (read more in Annex A “Theory of Empowerment through Learning”).

Considered this, it becomes evident that the role of the “teacher” is more about facilitating learning processes then providing prepared content in order to “transfer” it to the “trainee”. Facilitation involves managing group processes, influencing the way how members work together. Facilitation calls for a high degree of neutrality about content issues and a focus on group needs.2

It can be stated that training is a process through which staff and farmers learn about knowledge, skills and attitudes for the purpose of improving their performance at the job. Adults learn best in experiential learning environment where the trainer acts as facilitator providing opportunities for the participants to interact with each other and with the facilitator.

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2 See more annex A on (i) facilitation, (ii) facilitators role, (iii) importance of group learning.
1 The Methodology

1.1 Learning methodology as an integrated process

The Experiential Learning Methodology on Soil Fertility Management is based on a continuous involvement of the stakeholders, primarily the cotton farmers, and follows an integrated process of six steps as mentioned below.

a) **Identification of needs and potential best practises – Initial survey.** The main farmer’s needs and the related potential best practises are detected through a survey based on the techniques of RRA (Rapid Rural Appraisal) and/or PRA (Participatory Rural Appraisal).

b) **Analysis of the survey results.** The results of the Survey are properly classified, analysed and finally validated through the direct involvement of the cotton farmers.

c) **Assessment of the “Adoption Potential” of the identified best practises - Workshop with farmers and extensionists.** It is mainly done through a short workshop in which farmers and extensionists will get a feed back on the survey and will have the possibility to comment.

d) **Designing process – Create an action plan with the participatory developed targets, roles and terms of references.** Based on the previous steps, a concrete plan is designed and jointly agreed amongst the stakeholders.

e) **Implementation process – Realizing the key learning events.** The plan is executed, keeping open for adaptations. Ideally, this period takes few months time.

f) **Evaluation process – learning from the learnings.** The lessons learnt from the institutionalized learning process needs careful “after-action-assessment”. Differences in outcomes and impacts need particular attention, in order to improve effectiveness and efficiency in the organization and related to the evolving content. The results of this evaluation are fed into the next cycle of organized learning.

The first 3 steps constitute a sort of “aim setting process” that necessarily should include all relevant stakeholders, including lead farmers and involved extensionists and trainers.
1.2 Identification of needs and potential best practises – Initial survey

At this step, a survey is carried out with the active involvement of the organisation/s, to gain a greater understanding of their agricultural and livelihood systems. Farmers will be supported in identifying the problems that are of most concern to them, in describing what actions they have taken in the past to minimize each problem, and in indicating which of the problems have the highest priority. Main constrains and related innovations and best practises (from now on referred as “innovation”) that will represent the main topics of the Experiential Learning methodology, have already been identified and discussed in WP1 and WP2 Reports.

1.3 Analysis of the survey results

The second step of the Methodology consists in the analysis of the survey results and can be split in two different steps:

a) interpretation and classification of identified innovations
b) validation of the innovation by the stakeholders involved

1.3.1 Interpretation and classification of identified innovations

Identified innovations (§1.3 and 1.4 of WP2 Report) have been carefully analysed and reclassified in the following three groups, according to the level at which the innovations are implemented: (i) Farm management level, (ii) Extension services level, (iii) BioRe management level.

Secondly, each innovation has been classified also according to its nature in:
- Instrumental Innovation (I): related to practical measures to be implemented (e.g. agronomic practises)
- Organisational Innovation (O): related to process management.
- Strategic Innovation (S): related to problem-solving and orientation of action (e.g. processes of decision-making, financing, etc.).

The output of the analysis is shown and described below (tab.1):
<table>
<thead>
<tr>
<th>Implementation level</th>
<th>Instrumental Innovation</th>
<th>Organisational Innovation</th>
<th>Strategic Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm management level</td>
<td>Revise/improve crop rotation system, including use of leguminous plants and fodder plants on fallow land, in order to develop a fertility strategy.</td>
<td>Support cotton farmers organization at village level (farmer associations)</td>
<td>Develop a fertility strategy for each selected plot taking into account their specificities</td>
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<tr>
<td></td>
<td>Appropriate crop land management for a sustainable intensification strategy</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Introduce appropriate techniques of manure utilization</td>
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<td></td>
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<tr>
<td></td>
<td>Introduce proper agro-forestry practices, including green fences and border shrubs</td>
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<td></td>
<td>Use of adequate farm implements according to the soil type</td>
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</tr>
<tr>
<td>Extension services level</td>
<td>Implementation of experimental plots where to demonstrate the benefits of techniques for soil fertility management in Mwamishali farm.</td>
<td>Knowledge sharing on soil fertility management and related practice to maintain/improve it (crop rotation, manure management, agro forestry)</td>
<td>Encouragement of local innovation and farmers’ research</td>
</tr>
<tr>
<td></td>
<td>Assistance to selected lead farmers for the implementation of an intensification strategy</td>
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<tr>
<td></td>
<td>Carry out analysis on soil fertility - at least at Mwamishali farm and selected farmer fields - to see if there is a lack of nutrients incl. micro-elements hindering cotton growth</td>
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<td></td>
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</tbody>
</table>

Tab. 1: List of proposed innovations
<table>
<thead>
<tr>
<th>Implementation level</th>
<th>INNOVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Instrumental Innovation</strong></td>
</tr>
<tr>
<td></td>
<td>Improvement of statistical analysis of data with new software.</td>
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<td></td>
<td>Prepare an illustrated booklet in Kiswahili and posters on organic farming techniques and organic cotton requirements to be given to staff and farmers after first training Revise training manual according to the EL Methodology</td>
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<tr>
<td></td>
<td>Redesign farm data procedures and indicators. Align data with business targets based on profitability and sustainability and the ambition of being a model organic farming venture. Some indicators have been identified in order to be captured and monitored</td>
</tr>
<tr>
<td></td>
<td>Improve skills and competences of the training manager in organic farming</td>
</tr>
</tbody>
</table>
1.3.2 Validation of the innovation by the stakeholders involved

The aim of this step is to confirm the main findings of the survey and to validate the innovations.

The results of the survey and the identified innovation is presented during the “Feedback meeting” addressed to:
- selected lead farmers;
- trainers/extensionists
- BioRe staff (production, training, ICS manager and supervisors)
- Some of the farmers that have already been interviewed during the survey and RRA/PRA exercise in order to get a formal feedback from people who were directly involved.

1.4 Assessment of the “Adoption Potential” of identified innovations

The Assessment of the “Adoption Potential” of innovation is a crucial point, because the fundamental challenge is to have them adopted, maintained and eventually further developed by farmers and, in other terms, to identify the conditions necessary to achieve adoption.

This step is very important, because it allows to understand which of the innovations have the real possibility to be adopted and implemented. As highlighted by the interviews done during the survey, farmers were aware that manure is improving fertility and yields but they don’t use it, or they knew that sowing in rows is more beneficial and allows mechanization of weeding, which is crucial in improving the production, but they are not doing it. According to what Mr. Mange Kurwa from Minyanda said during the interview, somehow there are no big obstacles to the adoption of these practices. He suggested that farmers should discuss among each other to see how to tackle the issue.

Therefore, it seems that there is the need of taking a collective decision rather than pushing farmers to change individually, and that’s why the feedback meeting is a crucial point: there’s a basic need to understand in deep if a validated practice will be adopted or not at a community level, to fill in the gap between the knowledge and the action.

The Assessment of the “Adoption Potential” of innovation is part of a reflective phase of EL, within which the learner examines the experience and draws learnings from that reflection. That means that constrains should be recognised and accepted, and the innovations will be properly assessed in order to better understand which their actual adoption potential according to specific factors is. In the frame of this project the following criteria have been adopted:

- **Compatibility**, according to Swinkels and Franzel (1997) and to Reed (2007), assesses the extent to which an innovation or best practise is compatible with the physical environment, existing land use systems, and previously introduced innovations. Moreover it concerns whether farmers are able to manage the innovation or best practise because they have the required information and resources.
- **Profitability**, according to Swinkels and Franzel (1997) and to Reed (2007), is whether, from the farmer’s perspective, the benefits obtained from using the innovation and best practises are higher than for current practice and other alternatives.

- **Acceptability**, according to Swinkels and Franzel (1997), concerns whether farmers want to use the innovation or best practice because they perceive greater advantages than disadvantages from using them. Acceptability is directly linked, among other factors, to the perception that farmers have on the problem that is supposed to be solved or reduced through the innovation or best practise identified.

Assessment should be carried out through a semi-structured dialogue with farmers aiming at facilitating a more effective participation in the adoption and maintenance of innovation. Factors affecting the adoption potential of innovation will be considered in terms of “direction of the effect” and “strength of the effect” as indicated in table 2.

<table>
<thead>
<tr>
<th>Factors affecting adoption of innovations</th>
<th>Direction of effect(^{(a)})</th>
<th>Strength of effect(^{(b)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility</td>
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<tr>
<td>Climatic factors</td>
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<td></td>
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<td>Edaphic factors</td>
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<tr>
<td>Land use system</td>
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<tr>
<td>Labour constrains</td>
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<tr>
<td>Farmer experience</td>
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<tr>
<td>Profitability</td>
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<tr>
<td>Value of resources expected to be lost or forgone in order to develop best practises</td>
<td></td>
<td></td>
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<tr>
<td>Time needed to implement the best practise that could be spent elsewhere</td>
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<tr>
<td>Acceptability</td>
<td></td>
<td></td>
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<tr>
<td>Perception of soil fertility problem</td>
<td></td>
<td></td>
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<tr>
<td>Past investment in soil fertility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current practice</td>
<td></td>
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</tr>
</tbody>
</table>

\(^{(a)} \text{Direction of effect:} \quad --- = \text{unfavourable} \quad + = \text{favourable} \quad 0 = \text{no effect}\\
\(^{(b)} \text{Ratings of strength of effects:} \quad H = \text{high} \quad M = \text{medium} \quad L = \text{low} \quad \text{and} \quad 0 = \text{no}\\

### 1.5 Designing process

The designing process step will carefully plan the inputs, exercises, group assignments, timing and logistics of the training session.

Below there are some specific conditions and rules for success of EPL implemented at bioRe project:

- EPL is endorsed and “owned” by bioRe
- EPL is managed by bioRe on a regular base and applies to all or most topics of training and learning
- Both BioRe and the farmers agree on the central role and responsibility of the farmers
- The farmers agree to embark on the venture of a scientific and professional path and assume the role of co-manager of soil fertility
Soil fertility management- including water management- will be top issues for the next years, as it will take many years to re-establish soil fertility with the limited resources available. The prices for the main products, including cotton, need to be fair and remunerative in order to keep the motivation for the ongoing learning and skills improvements by the farmers.

Finally, the increasing pressure on the land and soil will enhance the chances for a growing interest by farmers to understand and improve their soils.

EPL as a concept will be institutionalized in the management of bioRe and will become – with time - a normal procedure of training for both farmers and extensionists. If appropriately done, it should deliver the expected positive results, i.e. the application of the designed themes and content, as well as the steady empowerment of the farmer. The final impact however will be dependent on the overall conditions of farming and agriculture, including the attractiveness of the markets.

The design process includes the following steps:
- Identification of target groups
- Identification of the competencies that are necessary and/or required in order to achieve the objectives of the Experiential Learning activities
- Design and development of the training modules according to the needs, priorities and resources.

1.5.1 Target groups

The identification of the target groups of the EPL is a very important and delicate step for the success of the EPL. The target groups identified during the process (see WP1 report) are: organic farmers; extension officers.

**Organic farmers**
The first target group is made by the organic farmers participating to bioRe project in the three chosen villages: Mwamanongu, Itaba and Ng'hoboko.

**Extension officers**
The second target group is composed by 14 extension officers and 9 supervisors who are part of the bioRe organisation.

1.5.2 Competencies of target groups

The set of competencies that are necessary and/or required in order to realise the process taken into consideration is called “professional domain”, which has been articulated, according to the results of the survey carried out in the previous step of the project, in different “fields of competencies” as described below.

a) **Organic farmers**

Soil fertility and soil structure improvement, including:
- Soil fertility management
- Agroforestry techniques
- Soil and water conservation techniques
b) Extension officers

Soil fertility and soil structure improvement, including:
- Soil fertility management
- Agroforestry techniques
- Soil and water conservation techniques

Innovation transfer, including:
- Knowledge and innovation transfer
- Facilitate farmer to farmer exchange
- Experiential learning management

According with the defined Professional Domain, in the tables below there’s the description of the set of competencies considered in relation with the identified target groups.
<table>
<thead>
<tr>
<th>Target groups</th>
<th>Professional domain (required skills and competencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil fertility management</td>
</tr>
<tr>
<td></td>
<td>Soil fertility techniques</td>
</tr>
<tr>
<td>Organic farmers</td>
<td>To have a basic understanding of soil, and of the importance of soil nutrients, organic matter and soil structure</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of the relation between soil properties and farm management</td>
</tr>
<tr>
<td></td>
<td>To be able to apply appropriate manure management techniques.</td>
</tr>
<tr>
<td></td>
<td>To be able to use leguminous plants to improve soil fertility on fallow</td>
</tr>
<tr>
<td></td>
<td>To be able to use appropriately the implements in order to improve the soil structure</td>
</tr>
<tr>
<td></td>
<td>To be able to plan a fertility strategy for the farm</td>
</tr>
<tr>
<td></td>
<td>To have a basic understanding of principles and criteria of agro forestry</td>
</tr>
<tr>
<td></td>
<td>To have a basic knowledge of appropriate trees species to be planted in the fields and the boundaries (i.e. Euphorbia tirucalli, Acacia polyacantha, Azadirachta indica, Faidherbia albida, etc.)</td>
</tr>
<tr>
<td></td>
<td>To be able to manage properly the agro forestry techniques.</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of how to preserve and improve Ngitili (traditional fodder banks)</td>
</tr>
<tr>
<td></td>
<td>To have a knowledge of how to improve the fallow and pasture land with fodder trees.</td>
</tr>
<tr>
<td></td>
<td>To be able to learn and share knowledge with neighbouring farmers</td>
</tr>
<tr>
<td></td>
<td>To learn and share knowledge with the extensionists</td>
</tr>
<tr>
<td></td>
<td>To have a basic understanding of the main types, properties and causes of soil degradation</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of main means and techniques to prevent or reduce wind and water soil erosion and maintaining soil fertility.</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of relationship between soil conservation and water conservation</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of rain water harvesting method for inducing, collecting, storing and conserving local surface runoff water for agriculture in semi-arid regions</td>
</tr>
<tr>
<td>Target groups</td>
<td>Professional domain (required skills and competencies)</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Soil fertility management</td>
</tr>
<tr>
<td>Soil fertility techniques</td>
<td>To have a basic understanding of soil, and of the importance of soil nutrients, organic matter and soil structure</td>
</tr>
<tr>
<td></td>
<td>Agro forestry techniques</td>
</tr>
<tr>
<td></td>
<td>To have a basic understanding of principles and criteria of agro forestry</td>
</tr>
<tr>
<td></td>
<td>To have a basic knowledge of appropriate trees species to be planted in the fields and the boundaries</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of the main agro forestry functions and technologies for semi-arid areas</td>
</tr>
<tr>
<td></td>
<td>To have knowledge of how to run and maintain a nursery, and how to plant trees</td>
</tr>
<tr>
<td></td>
<td>Soil and water conservation techniques</td>
</tr>
<tr>
<td></td>
<td>To have a basic understanding of the main types, properties and causes of soil degradation</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of main means and techniques to prevent or reduce wind and water soil erosion and maintaining soil fertility.</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of relationship between soil conservation and water conservation</td>
</tr>
<tr>
<td></td>
<td>To have a good knowledge of the techniques of rain water harvesting</td>
</tr>
<tr>
<td></td>
<td>Facilitate innovation transfer</td>
</tr>
<tr>
<td></td>
<td>To be able to get insights into farmers' priorities and to understand farmers' experiments</td>
</tr>
<tr>
<td></td>
<td>To be able to suggesting options and ideas to farmers and to encourage them to compare options and ideas with current practices</td>
</tr>
<tr>
<td></td>
<td>To be able to provide information on phenomena that farmers cannot observe on their own</td>
</tr>
<tr>
<td></td>
<td>To be able to design on farm experiment</td>
</tr>
<tr>
<td>Extension officers</td>
<td>Experiential learning management</td>
</tr>
<tr>
<td></td>
<td>To be able to apply approaches and set up tools and instruments for an Experiential Learning</td>
</tr>
<tr>
<td></td>
<td>To be able to initiate, support and encourage group learning</td>
</tr>
<tr>
<td></td>
<td>To be able to create a participatory learning environment by motivating, being friendly (facilitator attitude) and being a good listener and observer</td>
</tr>
</tbody>
</table>
### 1.5.3 Training Modules

In the context of the Experiential Participatory Learning Methodology, training modules have to be taken carefully, as they lose importance as a blueprint-tool for “teaching”. Only a part of the learning time will be spent on the input by the trainer, i.e. the training module and its “teaching”. The main part should be reserved for the learning process of the learners inside the group working and individually.

The training modules have to be designed and developed according to the needs, priorities and resources, identified and evaluated according to Methodology described in WP1 Report.

Below there’s a description of the structured training modules, distinguished according to the two target groups identified: trainers/extensionists and farmers.

**Training modules for Extension officers**

The following training modules are addressed to the extension personnel team in charge for, among others, advising and supporting farmers to take more responsibilities in the decisions on what should be done to improve fertility and yields in the long term.

<table>
<thead>
<tr>
<th>Training Module</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Soil fertility</td>
<td></td>
</tr>
<tr>
<td>management</td>
<td></td>
</tr>
<tr>
<td>Agro-sylvopastoralism,</td>
<td>- The concept of agro-sylvopastoralism</td>
</tr>
<tr>
<td>Ngtili</td>
<td>- Design of integration patterns in order to make best use of livestock for plants nutrition and vice versa</td>
</tr>
<tr>
<td>Soil, manure,</td>
<td>- Soil as a living system. The importance of the structure, biological life, soil nutrients,</td>
</tr>
<tr>
<td>green manure,</td>
<td>organic matter, texture, depth, colour, earthworms, roots</td>
</tr>
<tr>
<td>Crops rotation</td>
<td>- The various forms of manure (farm-yard, compost, vermiculture, etc.) and how to produce and manage them</td>
</tr>
<tr>
<td></td>
<td>- Improving the management of the existing farm yard manure</td>
</tr>
<tr>
<td></td>
<td>- Green manure: function and importance for farms with shortages of manure supply</td>
</tr>
<tr>
<td></td>
<td>“Reading” of nutrient-deficiency signs on the plants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B) Agroforestry and soil fertility</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological aspects, improved fallow, Ngtili, nurseries</td>
<td>- Introduction to agroforestry and the main related ecological aspects</td>
</tr>
<tr>
<td></td>
<td>- Relationship between agroforestry and soil fertility</td>
</tr>
<tr>
<td></td>
<td>- Selection of Trees and shrubs species</td>
</tr>
<tr>
<td></td>
<td>- Improved fallow by planting soil enriching species</td>
</tr>
<tr>
<td></td>
<td>- Improved Ngtili</td>
</tr>
<tr>
<td></td>
<td>- Making nurseries: how to plant and cultivate</td>
</tr>
</tbody>
</table>
### Training Module: C) Soil and water conservation techniques

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil cover, cover crops, contour vegetation</td>
<td>- Introduction to the main types, properties and causes of soil degradation</td>
<td></td>
</tr>
<tr>
<td>Soil erosion, rainwater harvesting</td>
<td>- The importance of soil cover and its main direct and indirect benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Different types of soil covers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Characteristics of the main cover crops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Contour vegetation in order to control water and soil erosion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Introduction to rainwater harvesting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Techniques of rainwater harvesting</td>
<td></td>
</tr>
</tbody>
</table>

### Training Module: D) Innovation transfer management

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory innovation development and transfer</td>
<td>- Introduction to participatory innovation development and transfer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Roles in participatory innovation development and transfer (farmers, researchers and extensionists)</td>
<td>- Collecting and documenting existing knowledge and local innovations</td>
</tr>
<tr>
<td>Farmer to farmer exchange</td>
<td>- How establish and manage a network of lead farmers and demo plots</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Organization of exchange visits among farmers of different areas/villages in order to analyze threats/problems or to see best practices</td>
<td></td>
</tr>
</tbody>
</table>

### Training Module: E) Experiential learning management

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Introduction to basic concepts in order to understanding learning: knowledge, interest, motivation, fantasy, dream, group, communication, experience, conclusion, decision, plan, action, CHOICE, innovation, adaptation management, perception, taking care</td>
<td>- Introduction to Experiential Learning</td>
</tr>
<tr>
<td></td>
<td>- Create a participatory learning environment (arrangement of the group, time for interactions, reflection, group work, experiments etc.)</td>
<td>- Organize visits among farmers of different areas/villages in order to analyze threats/problems or to see best practices</td>
</tr>
</tbody>
</table>

### Training modules for organic farmers

The following training modules are addressed to the lead farmers or “Host Farmers” who are actively involved in spreading the knowledge among the other organic farmers of the village. They are part of the experiential learning network and play the crucial role of “hosting” other farmers of the same village and same group of farmers in their farm to carry out practical training.

<table>
<thead>
<tr>
<th>Training Module</th>
<th>Title</th>
<th>Learning Objects (main topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Soil fertility management</td>
<td>Soil, organic manure, green</td>
<td>- Basics of the soil (structure, biological life, nutrients, organic matter, texture, depth, colour, earthworms, roots, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The different forms of organic manure and its importance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- how to increase biological mass and organic matter in the soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- focus on alternatives of compost and farm-yard manure making</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Improving the management of the existing farm yard manure</td>
</tr>
</tbody>
</table>
### Training Module

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
</tr>
</thead>
</table>
| **Crops rotation** | - Benefits of crop rotation  
- Selecting the right crops and crop combinations  
- The value of leguminous plants in the rotation  
- Fodder production and pasture management  
- Improving the fallow with inclusion of leguminous plants (ex. Crotalaria) |

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
</tr>
</thead>
</table>
| **B) Agroforestry and soil fertility** | - The role of trees and shrubs for improving soil fertility, for fodder and for better plant growing conditions  
- Identification and selection of the most appreciated and applicable trees and shrubs species of the region  
- Testing and planting trees and shrubs on the farm |

<table>
<thead>
<tr>
<th>Title</th>
<th>Keywords</th>
</tr>
</thead>
</table>
| **C) Soil and water conservation techniques** | - Basics of the main types and causes of soil degradation  
- Different types of soil covers  
- Characteristics of the main cover crops  
- Contour vegetation in order to control water and soil erosion  
- Rain water harvesting methods for inducing, collecting, storing and conserving local surface runoff water |

### 2 Implementation process

The experiential and participatory learning approach, is putting the learning experience of the farmer at the centre of interest, and the specific training actions are designed to find locally adapted solutions to specific problems and to explore how to exploit new opportunities, which are useful to particular individuals and groups.

The expected “outcome” is the learning experience of each participant, leading to concrete action according to the theme and content treated. As training sessions are embedded in a cycle (need assessment → training → evaluation → new design of (next) training), which itself is included in the management and planning process of a responsible organization - in our case bioRe Tanzania - the success of learning and empowerment is mainly a function of leadership and management of the organization aiming at changing skills and attitudes of the farmers.
To do so, the Experiential Learning follow a step process (see fig. 5) which includes:

a) **Target group identification**
   The identification is implemented following the methodology described in Chapter 1 of WP1 Report and it includes the following steps:
   - Collection of the main data and factors characterizing the area (environmental factors, Socio-economic conditions, main land management and agricultural practices)
   - Identification of the villages to be involved in the project
   - Understanding the village community and their needs
   - Identification of the potential lead farmers and the extension officers working in the villages, which will represent the fundamental actors of the experiential learning network.

b) **Survey on farmers’ socio-economic realities and their felt needs.**
   At this step a proper Problem Diagnosis is carried out with the active involvement of farmers and extensionists, to gain a greater understanding of their agricultural and livelihood systems. Farmers will be supported in identifying the problems that are of most concern to them, in describing what actions they have taken in the past to minimize each problem, and in indicating which of the problems have the highest priority. Problem Diagnosis is implemented following the methodology described in Chapter 1 of WP2 Report and it includes the following steps:
   - Determine the purpose for the study;
   - Selection of the farmers and resource persons (interviewees) and determination overall data gathering and analysis techniques;
   - Interviews;
   - Evaluation and analysis of data and information;
   - Restitution of results to beneficiaries.

c) **Assessment of the “Adoption Potential” of the identified BAP (best available practises).**
   The results of the Survey are properly classified, analysed and finally validated through the direct involvement of the cotton farmers. According to that, a specific workshop should be organised with the direct involvement of farmers and extensionists.

d) **Design of Experiential Learning process.**

e) **Training of lead farmers and extensionists.**
   Training has a twofold objects:
   - filling local knowledge gaps enhancing farmers' awareness on resource management principles
   - gather ideas on main action for improving soil fertility to be implemented by the lead farmers with the support of the extensionists.

f) **Implementation of the key learning events based on the action selected.**
   Then concrete selected action are designed.

g) **Evaluation process – learning from the learnings.**
2.1 A time frame for the implementation process

The Experiential Learning is an iterative and long-term process of action-reflection-action that spreads training events along the growing season and consecutive growing seasons as well. According to that, the implementation process shall be strictly linked to the cotton crop calendar.

In case of bioRe Tanzania, actions shall be coherent with the following calendar that is specific for the cotton grown in Meatu district:
- Mid of October to end of December: sowing period
- End of December to mid of June: vegetative period
- Mid of June to end of July: harvesting period
- End of July to mid of October: soil preparation period

The respect of the crop calendar is particularly necessary for all the agronomic practices and for some of the organizational activities as well.

Actions that could be implemented independently from the cotton crop calendar are not mentioned in the table below.
### 2.2 Implementation and documentation of learning events

The actions selected in the previous steps shall be developed into proper Action Plan. The Action Plan includes the reasons for implementing it, the objectives, the technical description of actions, tools and resources need to implement the action, data to be recorded, and criteria for evaluation of the actions. It may also include visits to other places where similar things are already implemented, or where otherwise relevant know-how can be gathered.

The actions should be designed in a way that farmers can manage and evaluate themselves, with just support of field extensionist. Finally an activity plan including a time schedule, material required and responsibilities is drawn up, and the monitoring and documentation system designed.

The actions are started according to the plans made and can be adjusted whenever thought necessary.

The procedure and the results of the Action Plan phase must be recorded and documented. This includes all activities and observations and suggestions made during the monitoring of the actions.

### 2.3 Evaluation of the results and their dissemination

Evaluations during and at the end of implementation process are the basis for deciding whether the results are useful in the local situation and whether technical guidelines can be deduced for their broader application.
Evaluation process should be managed in a participative manner with the direct involvement of lead farmers and the other farmers who followed the implementation process.

The results of the actions implemented should be disseminated through a farmer-to-farmer exchange by means of exchange visits, field days.
1. Conclusions

“Educate the farmer, then he will develop the fertility of the soil, and care for his land”

*James Jacob Machobane, Lesotho*

Soil fertility can only be safeguarded, if enough care is given to it. Care is a key requirement and needs itself concrete pre-conditions. Education is one of them. If the farmer knows enough about the processes inside the fertile layers of the soil, then he/she can favour the conditions or eliminate the factors prohibiting the realization of good soil conditions.

But one farmer is not enough. The majority of farmers need the understanding in order to impose the rules and regulations in the community. This is particularly true in a pastoral society with free grazing. Knowledge has to be transformed into rules and institutions (including bylaws), in order to be effective over time.

Lead farmers and regional leaders, understanding the dynamics of sustainable land use and the high risks of breaking its rules- leading to desertification, infertile land and breakdown of businesses including farming and land husbandry, are required to institutionalize processes of soil fertility management. This will take time. Companies like bioRe can play a noble and crucial role by building up and supporting a network of educated lead farmers and helping them to institutionalize practices leading to a sustainable land use management including the maintenance of fertile soils as preconditions for profitable businesses based on land use and farming.

Inside the organic farming movement, there is considerable and fast growing provision of manuals and experiences on subjects regarding soil fertility, but the most important aspect, however, is to implement the correct training methodology and tools to get effective and efficient results.

During the methodology development process, some relevant key aspects came out at the level of (i) bioRe management, (ii) bioRe training manager and staff,
and (iii) lead/model farmers and common farmers, that need to be taken in consideration.

(i) bioRe management

- Training needs resources, and management has to decide about its importance and the allocation in respect to human resources and finances. Key parameters are the qualification of the training staff and the time allocated for further learning and preparation of training courses. Finally, the use of demonstration plots at the Training Centre as well as its promotion on selected farms at village level may be strong signs of the willingness of the management in investing into the human capital of its contract farmers.

(ii) bioRe training manager and staff.

- The training manager and the other staff involved in training need a clear mandate to boost the knowledge and skills of the contract farmers, going often beyond the current business horizon. The training manager has a particular responsibility to mediate between the interests of the farmers (mainly seed cotton producer) and the one of the company (lint producer). Both parties depend on the soil fertility in order to succeed in the long term. But both parties also know that agronomic techniques beyond cotton is required in order to keep the soil fertility. Animal husbandry and agroforestry become so important features of the training manager of bioRe.

(iii) lead and model farmers and (iv) farmers.

- Most learnings of the farmers will happen at village level. The lead farmers, benefitting from training at the Centre as well as from coaching at farm, are the important players. The careful selection is decisive.

The Experiential Participatory Learning Methodology on soil fertility management is not a simple issue. It is in first line an issue to be organized at organizational level and becomes an issue of management. We consider the 7 elements as visualized below as the building blocks. There careful integration into the aim of empowering the farmer and rendering both the knowledge about the soil fertility and the learning about learning will be determinant for improvements of the soil fertility as well of the well-being of farmers.
Experiential Participatory Learning Methodology for Organic Cotton Industry in Tanzania - Towards Agriculture Intensification

**Vision:** Better efficiency of the industry  
**Aim:** Eliminate the bottleneck of low soil productivity

### The 5 layers towards soil fertility management

#### Priority innovations:
- group learning
- farmer empowerment
- field days
- series of BMP*
  - rotations
  - sowing
  - manure

*BMP: Best Management Practices

### The Learning Cycle

1. **Needs**
2. **Evaluation**
3. **Implementation**
4. **Design**
5. **Adoption Potential**

### Scale-up after piloting

- start with core group of champions (staff, extensionists, farmers)
- consolidate EPL at the 3 pilot farms
- communicate the positive impacts and (social marketing)

### Remarks:
- A to E may be conceived as layers (similar as the soil profiles, described in layers and the A-profile building the top)
- The Theory (Layer C) needs approval by all stakeholders. Then the tool can be ready
- All themes build up a dynamic system
- The “fertile soil” is a result of societal organization, determining the skills of the farmers and their attitude towards the fragile soil.

### The methodology is based on a dynamic system, including farming practices and management on value chain/industry level

**WP 3: Development of ELM Methodology on soil fertility management**
Annex A - Theory of Empowerment through Learning

Empowering Farmers and Extensionists through experiential and participatory learning

By Gian L. Nicolay, FiBL

Experiential learning focuses on interactive and upward spiral learning process of preparation-action-review in repeated cycles. The facilitators create learning opportunities through which participants discover and develop new insights of working together and explore inherent skills in themselves, rather than being taught by trainers. This opportunity helps the agricultural extension managers and lead farmers to discover how they can improve their performance and to empower themselves for undertaking their jobs and tasks effectively.

Text adapted from G. Jaya* and M.N.Reddy, National Institute of Agricultural Extension Management (MANAGE), Hyderabad, A.P., India

Create a learning climate

Organizational effectiveness depends largely on the people in the organization. Human resources are organic and complex and so is their development. While education is an instrument for the general development of the individual and his faculties, Human Resource Development in the context of an organization refers to the improvements in the capacities and capabilities of the personnel in relation to the needs of the organization. It creates a climate in which the deeper motivation of human knowledge, skills, capabilities and creativity can unfold. It involves the use of processes through which the personnel in organizations get prepared to give their best for organization’s objectives and achieve optimal effectiveness in their job roles. It sets up systems through which human capabilities and potential can be identified and tapped to the mutual satisfaction of the individual and organization.

The value chains in food and agriculture systems depend on the performance of organizations as well as contracted and independent farmers. The whole value chain has similar learning requirements as an organization.

People in any organization – and therefore in any well organized value chain- require information, knowledge, skill, vision, and mission to do their best for the organization and the value chain. HRD (human resource development) seeks to provide a package of systems and processes through which these can be cultivated and enhanced among the people forming part of the network of roles in the organization. As a system for the development of personnel in an organization, HRD is generally brought about through a bunch of sub-systems all of which are meant to focus on development of the individuals and groups constituting the social system of the organization. One of these sub-systems is training. Over the years, it has been viewed as the active arm of the top management for preparing the personnel to upgrade their capabilities to meet new organizational...
challenges. It is not an exaggeration that in the future, the winning organizations will be those that respond quickly to changing conditions, increasing workforce diversity, and the critical issue of training related problems.

Training thus assumed lot of importance in organizations. It is a planned effort by organizations to facilitate employees’ learning of job-related knowledge and skills for the purpose of improving performance.

Even when wide arrays of training methodologies are available, trainers tend to use the same old method of lecture followed by discussion that is passive in nature for the trainees. Since the personnel of organizations are all adults, they require an active mode of training that is found to be lacking in many of the training organizations. Training for adults need to be activity- based wherein their energies could be put to use in the learning process.

Development functionaries like agricultural extension managers who serve the farmers in rural areas by giving technical guidance, require a high degree of motivation and complex skills to deal with farmers and influence their attitudes, habits and practices to adopt new agriculture technologies. The same is valid for lead farmers. New ways of learning are required over the long value chain in order to achieve the various goals of adaptation, change and performance.

Importance of training and experiential learning in the group

Training is the corner stone of sound management as it makes professionals and knowledge workers more effective and productive. Every organization needs to have well-trained and experienced people to perform the activities towards the goal. In a rapidly changing society, employee training and development is a very important activity that an organization must concentrate to retain a viable and knowledgeable workforce.

Bernardin and Russell (1998) define training as any attempt to improve employee performance on a currently held job or one related to it. This usually means changes in specific knowledge, skills, attitudes or behavior. To be effective, training should involve a learning experience, be a planned organizational activity, and be designed in response to identified needs. Ideally, training should be designed to meet the goals of the organization (or the value chain) while simultaneously meeting the goals of individual employees and stakeholders including targeted farmers.

Good educational and training programs do not deluge the participants with enormous amounts of detailed information but help them to learn how to learn. Course curricula should be consciously designed to help the trainee to deal with new situations in a changing environment, from problem identification and analysis to the making and implementing of original solutions. This again, calls for the use of participative methods, carefully chosen simulation exercises and models, case studies with a strong element of change, and various group assignments which build on the combined knowledge and expertise of all members of the group.

There is an enormous range of variations in delivery depending on the style and approach of the trainer and the context of the training. At one end of the spectrum there are highly facilitative trainers who use very little formal input, relying instead on their experience to generate ideas within the group - they are very much output driven. At the other end there are the more traditional skills trainers, those who may be more comfortable in a ‘tell’ environment; their natural style is to input information. Both could be described as trainers delivering training, but the learning experience of the delegates will be very different in each case. Both approaches have advantages and disadvantages.

Key considerations while designing training for adults (Justice and Jamieson, 1999) are:

3 Like farmers and extensionists
• For adults, learning occurs best when it is motivated, not coerced or forced. The participant’s motivation comes from the context, relevance, and involvement level of the work.
• For adults, learning occurs best when it is conducted as a partnership. The facilitator’s work with the group, and participant’s work with one another, must be a partnership to which each party brings resources and expectations.
• For adults, learning occurs best when it involves their primary learning mode and is interactive and experiential. They need to stay engaged, use their senses, and utilize their knowledge and skills.
• For adults, learning occurs best when there is an understandable structure and reinforcement. It helps most people to see the whole and the parts, to know where they are going and where they have been. New ideas, new ways of thinking, and new skills need continuous and consistent reinforcement both within and outside the learning environment.
• Learning occurs best when people’s attention and energy stay engaged and focused, and this is possible if people feel comfortable in their surroundings.

There are two goals in the experiential learning process. One is to learn the specifics of a particular subject matter. The other is to learn about one’s own strengths and weaknesses as a learner i.e. learning how to learn from experience. When the process works, participants finish their educational experience not only with new intellectual insights, but also with understanding of their own learning style. This understanding of learning strengths and weaknesses helps in the back-home application of what has been learned and provides a framework for continuing learning on the job. Day-to-day experience becomes a focus for testing and exploring new ideas. Learning is no longer special activity reserved for the classroom, but becomes an integral and explicit part of work itself.

From teaching to facilitation
Facilitation is the design and management of structures and processes that help a group do its work and minimize the common problems people have working together. According to Justice and Jamieson (1999), facilitation is a neutral process that focuses on:

- What needs to be accomplished
- Who needs to be involved
- Design, flow and sequence of tasks
- Communication patterns, effectiveness, and completeness
- Appropriate levels of participation and the use of resources
- Group energy, momentum, and capability
- The physical and psychological environment

Facilitation involves managing group processes and dynamics, influencing how members work together and the nature of that responsibility calls for a high degree of neutrality about content issues and a focus on group needs.

The facilitators’ role is to assist the team’s efforts towards its objectives. According to Cook (1997), the roles and responsibilities of facilitator are:

- Is a neutral servant of the group: neutrality means that the facilitator is an impartial observer. Servant of the group means that the facilitator is working to the group’s agenda, not his own
- Does not contribute or evaluate ideas: the facilitator’s contribution concerns group processes and only very rarely the content
- Focuses the energy of the group on its task: the facilitator’s role is to ensure that the group is working together well to achieve its objective
- Suggests alternative methods of working: helps the group by offering alternative ways of solving the problem/looking at the situation
- Protects individuals and their ideas from attack: acts as a referee in terms of conflict, disagreement or tension in the group
• Encourages everyone to participate: ensures that all team members feel able and willing to make a contribution
• Helps the group to find win/win solutions: ensures that outcomes are beneficial to all parties
• Coordinates pre-and post-session logistics

It can be stated that training is a process through which employees and farmers learn the knowledge, skills and attitudes for the purpose of improving their performance at the job. Adults learn best in experiential learning environment where the trainer acts as facilitator providing opportunities for the participants to interact with each other and with the facilitator.

**Training Methodology**

It is a fact that individuals and groups have lot of potential and the challenge is to realize the energies and skills of all the members to benefit organization as a whole. If the training is valuable for individuals, it is even more powerful when a team and project members are trained, it can transform the behavior of a whole organization. The central theme of all training is to help people manage better. The job of managers\(^4\) is getting things done, usually in cooperation with other people. We propose to follow an integrated process of training as mentioned below:

1. Needs assessment
2. Aims setting process
3. Designing process
4. Implementation process
5. Evaluation process
6. Feedback process

Facilitators give utmost importance to structure any training program which will include a range of activities to reflect the different learning styles like

- Theory input
- Practical experience through group tasks
- Application of theory to the practical experience through rigorous and in-depth reviews
- Ideas generation and consolidation of learning in general sessions.

On arrival at the training venue, the participants get introduced to the training staff, institute and to each other. A detailed introduction to the objectives, methodology of the training, expectations of the course staff follows. Based on their background, participants are divided into heterogeneous groups. Each session consists of a brief input on the topic followed by group tasks that are done in separate groups with the help of facilitator who mostly acts as an active observer. The tasks are mostly neutral in nature and carried out with time specifications. Review follows task. Group members themselves generate the lessons from the tasks and reviews so that they are owned by them. Facilitators use the technique of in-depth probing for drawing the lessons. After the review, all the groups meet in general session where each group shares their learnings with other groups by making brief presentations. Summarization of the learnings, application of the learnings to the job situation and additional inputs on the same topic are given by the course director.

\(^4\) And every good farmer is also a manager
Thus participants consolidate ‘the known’ and then move to the ‘unknown’. This cycle goes on throughout the training.

To enable groups to practice working together, the group members carry out a series of tasks, each calling for a certain amount of action, and having an end product that can be reviewed by the group itself. Tasks given are short-usually less than an hour. Each task is followed by a review, in which participants analyze the way they worked together, and plan to repeat practices that helped, and avoid behavior that hindered.

Thus, a series of task cycles are carried out. In the groups, for any task, first some preparation (P) takes place followed by action (A). The preparation may be short or long depending on the complexity of the task which would include aims setting, information collection and deciding on subtasks and planning. After the action, another useful step is to review (R) the end results and the process. This process could be explained as Preparation-Action-Review cycles.

Preparation    Preparation
time

Review      Action        Review   Action

The learning comes from the way the members of the group work together – how they agree on an effective approach to the task, and how they combine their talents to build a successful team. People are encouraged to experiment since they operate in a risk free environment. If some procedure does not work it may be thrown out, while if it proves useful, it can be deliberately used again. In this way people acquire a certain amount of knowledge of human behavior; but far more valuably, they begin to build up habits of good management that they can develop further at work.

Groups on training program consist of five to eight participants, with two to four groups on a course. This makes a group small enough for everyone to take part, and large enough to provide problems of interaction e.g. people have to agree on aims and procedures. This size of group is also large to bring out a differentiation of roles, such as coordinator, ideas generator, timekeeper or conciliator. In groups people can experiment with their own behavior, and try out things they would not risk doing among their colleagues at work. A coach who is called a facilitator helps groups. The facilitator’s job is to observe and help them to see what they did that was different, what it was that helped finish the task in time. They focus more on successes and what / how improvements can be done for future tasks. The facilitator only advise or put a question so that the group thinks in that direction, but do not prescribe what people should learn. Nearly all the learning is inductive, the facilitator and the group pull lessons out of what actually happened and devise their own procedures for the future.

An effective facilitator knows to intervene in group processes in an assertive fashion without being either over-dominant or hesitant. Queries and suggestions is the armory of the facilitator whenever he/she decides to intervene. Importantly, although the facilitator is inputting to the group at this point, the attitude which he/she adopts is still one of neutrality. The facilitator questions, makes comments or suggestions but leaves it up to the group whether or not to take these forward. This helps in taking up ownership of the learning process. The facilitator abides by the team’s decision. The facilitator uses observation skills to make a judgment on when to intervene.

Facilitation is primarily about enabling, supporting and encouraging participant learning. This is achieved by adopting a flexible style of teaching that is trainee-centered, experiential and activity based. In this case, the facilitator needs to have all the knowledge
and skills of the trainer/tutor, and also may need to be even more knowledgeable in view of the unforeseen demands that might be made by the learners. The facilitator must be able to stand back and not present himself as the expert, rather a resource for the free use of learners. He/she must be able to intervene or stay remote at the appropriate moments; to lead the learning process, to offer relevant activities, but allowing them to dig themselves out of the holes they have dug for themselves. When the training program is in progress the facilitators will have several roles to play, some of them are presented below.

**Role of course director:**
- Paces the course as per the needs of participants
- Provides safe learning environment by being flexible and informal
- Sets the tone by welcoming participants, briefing on learning aims and program
- Ensures that learning is based on the experience of groups and keeps at the level where the groups are at
- Establishes clearly to staff and participants the aims of the session
- Periodically observes the groups to assess learning and skill development
- Listens and gives importance to group reports and takes care not to compare them
- Times General Session inputs so that they take learners forward in their learning
- Develops inputs by involving the learners
- Synthesizes learning by bringing out key points/lessons from reports
- Indicates before presentation of group reports, the time available for presentation and also what to present
- Looks after course administration such as equipment, tea arrangements, transport, etc

**Role of coach/facilitator:**
- Builds rapport with the group and addresses participants by name
- Creates learning environment by being informal, friendly, encouraging, etc
- Observes the progress of the group
- Not imposing his/her ideas on the group
- Enables group to learn inductively i.e., to learn from experience
- Focuses on the process i.e., how the group is working
- Charts verbatim of what the members say while doing process reviews
- Avoids win-lose situations with group
- Probes through questions in reviews
- Intervenes when group is stuck and not interfere in task
- Involves all members in review and respect each member’s views
- Strikes a balance among varied views by acting as mediator
- Avoids making evaluative judgments
- Highlights successes of the group

In every training program, the facilitators change their roles and assume roles of course director and group facilitator. Mostly, the inputs are given in general session where all groups meet to share the lessons. In groups, the tasks are used as vehicles of learning where these inputs get reinforced through experiential learning and rigorous and in-depth reviews. Very rarely, inputs are given in groups to have same level of learning progress for all groups.

Source: G. Jaya* and M.N. Reddy), National Institute of Agricultural Extension Management (MANAGE), Hyderabad, A.P., India
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