Impact assessment of FRP's Participatory On-farm trials and farmers training programs

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Farmers' Research Project
P.O. Box 5746
Addis Ababa
Ethiopia

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>III</td>
</tr>
<tr>
<td>ACRONYMS</td>
<td>IV</td>
</tr>
<tr>
<td>PREFACE</td>
<td>V</td>
</tr>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td>IX</td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background to the project</td>
<td>1</td>
</tr>
<tr>
<td>1.2 The participatory on-farm trial programme</td>
<td>2</td>
</tr>
<tr>
<td>1.3 The content of POFTs</td>
<td>3</td>
</tr>
<tr>
<td>2. METHODOLOGY OF IMPACT ASSESSMENT</td>
<td>10</td>
</tr>
<tr>
<td>2.1 PM&amp;E training</td>
<td>10</td>
</tr>
<tr>
<td>2.2 Formation of impact assessment teams</td>
<td>11</td>
</tr>
<tr>
<td>2.3 Preparation of a study plan and materials</td>
<td>11</td>
</tr>
<tr>
<td>2.4 Fieldwork: sampling and interviewing</td>
<td>12</td>
</tr>
<tr>
<td>2.5 Discussion, preliminary analysis and write up</td>
<td>13</td>
</tr>
<tr>
<td>3. RESULTS OF THE IMPACT ASSESSMENT</td>
<td>14</td>
</tr>
<tr>
<td>3.1 General perspectives of POFT farmers</td>
<td>14</td>
</tr>
<tr>
<td>3.2 Impact in relation to POFT objectives</td>
<td>15</td>
</tr>
<tr>
<td>3.3 Farmer perspectives on particular technologies</td>
<td>18</td>
</tr>
<tr>
<td>3.4 Perspectives of farmers on training</td>
<td>24</td>
</tr>
<tr>
<td>3.5 Impact in relation to training objectives</td>
<td>26</td>
</tr>
</tbody>
</table>
3.6 Impact in relation to training activities ......................................................28
   Travelling seminars....................................................................................28
   Training on fuel saving stoves ..................................................................31
   OFT and PRA training courses .................................................................32
   Mole rat training course and workshop ......................................................32
3.7 Perspectives of non-participant farmers ..................................................33
3.8 Perspectives of key informants .................................................................34

4. CHALLENGES AND LESSONS LEARNED ...................................................36
   4.1 Challenges............................................................................................36
   4.2 Lessons learned.....................................................................................37

5. CONCLUSION AND RECOMMENDATIONS ..................................................39
   5.1 Conclusions..........................................................................................39
   5.2 Recommendations.................................................................................40

ANNEXES........................................................................................................42

Annex 1: Questionnaires used for Farmer Level Impact Assessment ..........42
   Semi-structured questionnaire to sampled farmers involved in participatory on-farm trials (POFTS) ........................................................42
   Semi structured questionnaire for BOA key informants .........................43
   Semi-structured questionnaire to sampled farmers involved in FRP training components .........................................................43
   Semi-structured questionnaire for non-participating farmers .................44
LIST OF TABLES

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE 1: PARTICIPATORY ON-FARM TRIALS CONDUCTED BY FRP IN</td>
<td>8</td>
</tr>
<tr>
<td>COLLABORATION WITH OTHER ORGANISATIONS (1993 – 1997)</td>
<td></td>
</tr>
<tr>
<td>TABLE 2: NUMBER OF PARTICIPANT FARMERS IN POFT AND TRAINING</td>
<td>9</td>
</tr>
<tr>
<td>PROGRAMMES</td>
<td></td>
</tr>
<tr>
<td>TABLE 3: SAMPLED FARMERS AND WOREDA BOA KEY INFORMANTS</td>
<td>13</td>
</tr>
<tr>
<td>TABLE 4: RESPONSE OF POFT FARMERS TO KEY QUESTIONS</td>
<td>15</td>
</tr>
<tr>
<td>TABLE 5: &quot;YES/NO&quot; RESPONSES OF TRAINED FARMERS TO IMPACT QUESTIONS</td>
<td>25</td>
</tr>
<tr>
<td>TABLE 6: RESPONSE OF NON-PARTICIPATING FARMERS</td>
<td>33</td>
</tr>
<tr>
<td>TABLE 7: RESPONSE OF WOREDA BOA KEY INFORMANTS</td>
<td>35</td>
</tr>
</tbody>
</table>
ACRONYMS

ACA  Awassa College of Agriculture
ARC  Awassa Research Centre
BoA  Bureau of Agriculture
BoPED Bureau of Planning and Economic Development
FARM Food and Agricultural Research Management
FFHC Freedom from Hunger Campaign
FPR  Farmer participatory research
FRP  Farmers' Research Project
GOs  Governmental organisations
ILCA International Livestock Centre for Africa
ILRAD Institute of Livestock Research and Animal Disease
NGOs Non-governmental organisations
PA  Peasant association
POFT Participatory on-farm trial
PME Participatory monitoring and evaluation
PRA Participatory rural appraisal
WADU Wolaita Agricultural Development Unit
PREFACE

FARM Africa is a non-government organization, registered as a charity in Britain, and working on projects in Ethiopia, Kenya, Tanzania and the Republic of South Africa. One of the Projects on which it is working in Ethiopia is the Farmers’ Research Project (FRP) in the Zone of North Omo, Derashé and Konso special woredas in Southern Ethiopia. The project was started in 1991 and has been financed by the Department for International Development (DfID) of the British government.

The Project has worked with government and non-government organisations aiming at establishing sustainable systems for the development of appropriate agricultural technology and management practices involving farmers in research. The following project activities have been undertaken over the last seven years.

- **Studies**: diagnostic studies to obtain understanding of complete farming systems; topical studies to understand and identify the problems in the production of specific commodities; special studies for in-depth investigation of particular problems.
- **Training**: formal courses, informal workshops and look-and-learn visits in North Omo for staff of GOs, NGOs and farmers; some courses and workshops abroad; a project library specializing in FPR; a program of dissemination of project experience.
- **On-farm trials**: a program of on-farm trials designed to test both appropriate technology and different ways of organizing effective collaboration between farmers, researchers and extension staff.
- **On-station trials**: trials conducted by researchers under controlled conditions to underpin and support the program of on-farm trials and other research efforts by farmers.
- **Monitoring**: a program to monitor the impact and effectiveness of the FPR approach.
- **Review**: to evaluate the project.
Considerable effort has been made to accomplish the above activities. Two external reviews were undertaken in May 1992 and 1995. Both the 1992 and 1995 review teams reported favourably and recommended that Department for International Development (DFID) finance second and third stages respectively. Accordingly, the second stage proposal was approved and carried out for three years. Whereas the proposal for the third stage, which was recommended for four years, was not approved by DFID. Instead a 12-month phase was offered to consolidate and finish off outstanding fieldwork and the lessons learnt by the project.

Review and assessment of the impacts of project activities are the major elements of the 12-month interim phase. As the project drew towards the end of its agreed life more emphasis has been given to systematically assess the impact of the project and disseminate the findings at large. Additional review involving staff of various organizations who are stakeholders in the project was undertaken in 1998.

The review began with a training on participatory monitoring and evaluation (PME) which was conducted in October 1997. The PME training was followed by impact assessment of four project activities, (i.e. research, training, publications and library), by the project team together with nominated representatives from the collaborating institution, namely the Bureau of Agriculture (BoA), the Awassa Agricultural Research Center (ARC), Awassa College of Agriculture (ACA), Bureau of Planning and Economic Development (BoPED). In addition to the impact assessment, a review of "FRP's relation with the regional Bureau of Agriculture, Agricultural Research Institute and the Awassa College of Agriculture, including the new policy development and their implications for farmers participatory research incorporation" was carried out between February and March 1998. All these reviews highlighted the impact areas of the project for dissemination and document key lessons for further promotion of FPR and for the use of similar projects in Ethiopia and beyond.
Three reports were produced as an output of the review activities. The first two were produced by the PME trainees who have undertaken the impact assessment at farmer and institutional level covering main project activities indicated above. Dr. Seme Debela, a private consultant who reviewed FRP's relationship with partner organizations, produced the third report.

All the three reports are agreed to be published as FRP's monitoring report series. In these series three reports\(^1\) were published in 1994 and 1996. One of the impact assessments report entitled "Report on the Impact assessment of FRP's main activities on organizations collaborating with the project" is published as FRP monitoring report number 4\(^2\). This report looks specifically at the impact of the farmer level activities, both the participatory on-farm trials (POFTs) and the various farmer-training activities. It is the fifth in the series of monitoring reports undertaken during the lifetime of the project.

The report is the outcome of collaboration between various experts from governmental partner organisations who participated in the Participatory Monitoring and Evaluation (PME) training workshop conducted in October 1997. The following is the list of experts and their respective organisations involved in the study:-

<table>
<thead>
<tr>
<th>Expert</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>Getachew Kassaye</td>
<td>Awassa Agricultural Research Centre</td>
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<tr>
<td>Shewangizaw Zemekun</td>
<td>Regional BoA</td>
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<tr>
<td>Solomon Aklilu</td>
<td>Zonal BoA, North Omo</td>
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<tr>
<td>Gebremahanam Mekuria</td>
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<tr>
<td>Keserto Orkaido</td>
<td>Konso special woreda BoA/FRP</td>
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</table>

The report is produced by the team members listed above and edited by Dr. Alistair Sutherland of the Natural Resources Institute (NRI) of England. Ato Tesfaye Deribe, FRP’s Socioeconomist, who is also the member of the team has made a significant contribution in restructuring and editing of the report. The contribution of the team members, Dr. Alistair Sutherland and the interviewees is gratefully acknowledged. FARM Africa would like to appreciate and express its
gratitude towards BoA and ARC, which made available their staff members to take part in the process of impact assessment and production of this report.

Ejigu Jonfa
Coordinator, Farmers Research Project


EXECUTIVE SUMMARY

1. The Farmers Research Project (FRP), in collaboration with its partner organisations, has been conducting participatory on-farm trials (POFTs) and training in North Omo Zone, Konso and Derashe special Woredas since 1992. The projects' overall objective was to develop sustainable systems for technology development at farmers' level, including linkages between partner governmental organizations. These include the Bureau of Agriculture (BOA) Awassa Research Centre (ARC), Awassa College of Agriculture (ACA) and some NGOs operating in North Omo.

2. Since the project started, 14 on-farm trials have been conducted involving more than 500 farmers covering over 50 peasant associations in eleven woredas of North Omo zone, Konso and Derashe special Woredas. Furthermore, since 1994, a number of farmer training activities have been undertaken, including travelling seminars, workshops and seminars which have involved more than 290 farmers of whom 23 percent were female.

3. In January 1998 the FRP, together with representatives of its partner organisations, conducted a participatory interdisciplinary impact assessment. This was done in order to assess how the POFT and training programmes have affected the lives of participant farmers and also non-participant farmers living nearby.

4. The impact assessment consisted of individual and group interviews with a sample of participant and non-participant farmers and key informant staff from the local BOA. The sample was drawn from 11 woredas in the project area. Analysis of the impact was done by assessing what farmers said in relation to the four specific objectives of the POFT programme and associated areas of impact. These were: a) to improve farmer's livelihoods/income and productivity; b) to develop technology; c) to improve local (farmer level) research capacity; and d) to improve local technology access, multiplication
and dissemination capacity. For each objective, a set of indicators was developed to provide a qualitative assessment of impact.

5. In all of the woredas with POFTs, the majority (57%) of the farmers interviewed had been involved in on-farm trials for three seasons or longer. 32% had been involved for two seasons and 11% for one season only.

6. Due to the open-ended nature of the discussion with farmers, full quantification of the impact against all of the indicators was difficult. Nevertheless, analysis of farmers responses clearly showed that participation in the POFT programme had a positive impact in all four impact areas for many of the farmers; only 3 farmers (8%) said they did not benefit.

7. A large proportion of the POFT farmers had adopted at least one of the technical results, and in 78% of all cases the technology led to reported livelihood improvements in either household income, food security or safety.

8. Regarding the second impact area, technology development, a smaller but significant proportion of the farmers reported technology adaptation and conducting their own research in order to develop technology, mainly in the area of pest control (mole rat trapping, sweet potato butterfly trapping and tsetse fly repellent).

9. Regarding the development of farmer research capacity, as a result of the POFTs, nearly all farmers had a wider choice of technologies than they could use to address a specific problem, and most were able to lay out and manage conventional on-farm experimental plots and evaluate technologies using participatory ranking. A few were also actively conducting their own experiments.

10. 97% of the participating farmers reported interest from neighbouring farmers in visiting the trials, and over half (53%) reported that at least one neighbor
started applying the new technology or technologies. Many of the farmers with variety trials, forage trials, stove trials and mole rat trials had multiplied the technology for own use, some of these were also supplying other farmers, and a few were actively demonstrating technology to other farmers. While nearly half (45%) of the non-participating farmers had shown an active interest in the POFT programme, 76% regarded the POFTs as important and useful, and were willing to participate in the programme, if asked. In some areas, notably the cotton growing zones, farmers had started requesting technology supply (e.g. cotton seeds, bean seeds, fruit tree seedlings) through their PA and the BOA.

11. Regarding the impact of farmer training, cases of technology adoption (on a sustainable basis) after training were reported, including improved enset management by Derashe farmers. Increased productivity from the farmer training included good results from composting and terracing, which followed the adoption of technologies from other areas after attending travelling seminars. Very clear evidence of material benefit came after Konso farmers visited the Ghibe River Project and thereafter adopted a tsetse flies control programme which, according to farmers, increased cattle numbers from 90 to 400.

12. Technology adaptation following the introduction of technology seen in other areas was also reported including use of vetiver grass instead of stones for terracing by Goffa farmers after visiting Konso. Improvements in local (farmers’) research capacity was hard to affirm as an impact of training, but after visits many new alternative technologies became available as knowledge to participating farmers, including some of the examples cited above, and also fruit trees and forage crops. It was not clear whether or not farmers were better able to judge which of the alternative technologies would be worth trying out after their visits, but a number of farmers clearly started conducting new experiments, including one farmer who conducted several
experiments comparing compost with inorganic fertiliser on several different crops including teff, wheat and maize.

13. Farmers participating in the PRA training reported that they had expanded their knowledge and understanding of local problems, but that this training had also led to some farmers to be suspicious about their reasons for doing PRA and others asking them what they were going to do next, now that problems had been identified. In terms of improved local technology access, multiplication and dissemination capacity, after training many of the farmers reported that they had shared information with other farmers. A few farmers trained took on a training role, motivated to defend and demonstrate technologies to other farmers. This has happened with the mole rat traps and compost. The case of improved stoves has proved more difficult. No evidence was collected regarding the snowball effects of training, but three quarters of the non-participating farmers said that they thought the training was useful, and they would like to participate in the future.

14. Several lessons arose from the POFT impact assessment. The farmers clearly associate success of a POFT with their ability to get sustainable access to the inputs required after the new technology has proved to be useful to them. For some of the farmers, participation in the trials was a cost to them, demanding more of their labour and time and leading to possible exclusion from other agricultural programmes (credit and training), on the grounds that they have already benefited from the POFT. There is a danger of over-extending the POFT research programme in a situation where the BOA management is not in a position to allocate staff resources for follow-up.

15. Other issues relating to POFT implementation include: limited participation of other household members (women and children) in the trials, limited data due to the produce being consumed as early food, lack of clarity regarding
decision making at household level during trial implementation, and lack of clear guidance on how to select farmers.

16. The assessment of farmer training clearly showed that farmers can be very effective trainers and demonstrators of new technology. However, those who participate in the training do not always share with other farmers on their return from training. Travelling seminars proved very effective for encouraging farmers to try out new technologies using their own resources, adapting them to their local conditions. Follow-up after training of farmers is currently very weak, and how best to do this follow up is a challenge. Methods for selection of trainees and identifying demand for farmer training require to be further refined, in order to improve the impact of training.
1. INTRODUCTION

1.1 Background to the project
The Farmers' Research Project of FARM Africa has been operating since 1991 in North Omo, Konso and Derasheworedas, of southern Ethiopia. The project's wider goal is to raise the incomes of resource poor farmers in the project area. Improved agricultural technologies are perceived as the key element to boost agricultural production and ultimately to raise the incomes of the resource poor farmers. In view of this, it was assumed that promoting of farmers' participation in problem identification and research is a cost-effective way for developing technologies appropriate to the resource poor farmers. Hence, the project attempts to create the institutional environment for acquiring knowledge about ways of doing farmers participatory research in the project area. It does this through a number of its activities including a range of training on participatory approaches, participatory on-farm trials (POFTs), and research studies on aspects of local farming systems.

The project's activities have been implemented through a core multidisciplinary team, comprised of a project co-ordinator, an agronomist, a socio-economist, a training officer and very recently a gender specialist based at its Awassa office. In addition it has two field offices, one in Soddo and the other in Arbaminch, the zonal headquarters for North Omo each manned by a field officer at graduate level and assisted by three field staff seconded from the BOA. In many of the activities, the project has been assisted by appropriate staff from other organisations, as a part of collaborative arrangements, and at times through commissioning of research and consultancy inputs.

When the second FRP mid-term review was conducted in 1995, the review team recommended that prior to a proposed third phase, the project should assess the impact of its activities. After a period of uncertainty about the future of the project, a 12 month extension period was agreed in order to consolidate ongoing
activities, review achievements and impact, and disseminate the results. The review of achievements and impact was to be conducted as a learning experience for the project and its collaborating institutions, including the Bureau of Agriculture (BOA), Awassa Research Centre (ARC) and Awassa College of Agriculture (ACA). This involved training in participatory monitoring and evaluation methods, and a collaborative impact assessment exercise involving nominated staff from the partner organisations. This process is elaborated in the section on methodology below.

1.2. The participatory on-farm trial programme

Participatory on-farm trials (POFTs) have been a key component in FRP’s programme, demonstrating the Farmer Participatory Research (FPR - not to be confused with FRP) approach to research, extension and development agencies, and forging linkages with farmers and collaborating institutions. The purposes of conducting participatory on-farm trials are two: (i) to develop or test improved agricultural technology, and (ii) to discover and test ways of promoting and maintaining genuine participation by farmers as partners in the research process.

On-farm trials are not a completely new activity, and have been carried out in the project area over a number of years by different organisations. However, an inventory of previous on-farm activities in North Omo by the project indicated, in many cases, that the findings of these on-farm trials were not documented or stored in a way that enabled their further use. In most cases the results are “lost” and, at best, only imperfect memories of them remain, in many cases not even that. Realisation of this helped the project to focus its participatory on-farm trial program into three major areas;

i. Conduct participatory on-farm trials,

ii. Facilitate its partner organisations to conduct POFTs, and

iii. Providing a forum at which the results of on-farm trials can be discussed and disseminated for use.
It is important to note that the on-farm trial programme has been oriented to the specific problems faced in local areas. In all woredas where on-farm trials have been conducted, a diagnostic survey using PRA methods has been conducted, very often as part of the projects training programme in PRA. The findings of the diagnostic surveys, together with subsequent meetings and discussions with local farmers and experts from the BOA and the agricultural research organisations, have provided the basis for the technical content of the participatory on-farm trials conducted by, or in collaboration with, the project.

A large number of on-farm trials have been conducted by FRP and its partner organisations since 1992 (Table 1). These have covered a range of technical areas including food and cash crop variety testing, insect and rodent pest control, soil fertility, forage, animal health and stove testing. The project has also initiated an annual research results workshop to encourage GOs and NGOs to bring their efforts to a wider audience and subsequently publish a report to assist with the dissemination of their findings.

The process of implementing FRP’s POFT program has been a collaborative endeavour between the project, the Bureau of Agriculture, the Awassa Research Centre and NGOs such as SOS Sahel, World Vision, Concern and FFHC. During the course of the project, FRP’s involvement in the trials has ranged from very close and intensive direct involvement, to a low level involvement limited to providing technical and material support for partner organisations conducting POFTs.

1.3. The content of POFTs
The POFTs conducted by FRP and its partner organisations since 1993 cover a range of topics indicated in Table 1. In addition to the participatory on-farm trials, studies undertaken by the project in collaboration with farmers and partner organisations have addressed topics of importance, some of which have also
resulted in trials and technology testing. These include studies of trypanosomiasis control in the Konso lowlands, cotton production in lowland areas, fertiliser supply and use, soil fertility, sweet potato butterfly control, and enset production and processing. Some of the topics covered by the POFT programme are highlighted below, in order to provide some background against which to present the results of the impact assessment at farmer level.

Maize: maize is one of the most important cereals in terms of acreage, production and yield. Its production in the southern region contributes more than 53% of the total arable land use. Maize has important functions in the farming and livelihood systems of the area; securing an adequate family food supply throughout the year, earning cash for household expenditure on farm inputs, school fees, taxes etc. and for providing fuel, building materials and animal feed. Fertiliser and certified seed are components in a very large national extension programme of 0.5ha demonstration plots, in which maize is the most important crop. Participatory on-farm trials on maize varieties and management provided a significant opportunity for developing more location specific extension packages and options for maize.

Sorghum: In many drought prone areas of Ethiopia, sorghum is the major crop grown in large areas where the growing season is short with erratic and unreliable rainfall. In the lowlands of North Omo, Konso and Derashe Woredas sorghum is an important food crop for the majority of the farmers. In the Southern Region it is the third crop, and comprises about 20% of the total crop production of the region. New sorghum varieties are also part of the national extension programme of 0.5ha demonstration plots.

Haricot bean: Beans are widely produced in the mid and low altitude zones of North Omo, Konso and Derashe. They are grown in association with maize, coffee and enset by farmers in Wolaita who practice multiple continuous cropping to maximise production per unit area. Farmers grow the local bean variety, "Red
Wolaita" which is early maturing and has good taste and high market demand. Following this, in collaboration with Concern and Awassa Research Centre, FRP initiated on-farm trials of haricot bean varieties in Damot Woide with the objective to identify an early maturing and better yielding variety preferred by farmers.

**Sweet potato:** With rising fertiliser prices and smaller farm sizes, sweet potato is gaining in importance as a local food, and also as a cash crop for sale in local and more distant urban markets. It has the advantage of giving high yields from a small area with minimal external cash inputs, and also some drought tolerance. The main problem identified during PRA exercises was severe damage caused by the sweet potato butterfly. Studies and on-farm trials were conducted in order to try and address this pest, initially through identifying resistant varieties and subsequently through trapping using desmodium.

**Cotton:** This used to be a major cash crop in the lowlands of the project area, but smallholder cotton cultivation has declined greatly following the collapse of a subsidised input supply, credit and marketing support system. Farmers in the lowland areas are desperate to find a cash crop with which to improve their income, and some revival of cotton growing was an option identified. They expressed an interest in conducting research trials in order to identify cotton varieties and pest control measures which would enable them to increase their production in conditions where the supply of inputs is less favourable than previously.

**Soil fertility:** With decreasing farm size, continuous cultivation, and rises in fertiliser prices, declining soil fertility is currently perceived as a major production constraint by many farmers in the project area. The problem affects all crops, and cereal crops in particular. More use of organic manure (compost, household waste and cattle manure) has been explored in some on-farm trials, and studies of farmers' management strategies for soil nutrient management have been
conducted in order to better understand the existing systems so that interventions can be targeted more effectively in the future.

Fuel saving stoves: Deforestation and resulting fuel wood shortage and deterioration of soil quality are becoming a problem in Wolaita area. Women spend about 65% of their time in fuel wood collection (FRP Annual Report, 1993). To tackle this problem, a fuel wood saving stove trial was initiated with the involvement of women in Damot Gale Woreda, with the objective of involving rural women in finding solutions to the problems of degradation and fuel wood scarcity, and to evaluate the performance of various models of fuel saving stoves.

Livestock nutrition: In the mid-altitude areas, human population densities increased to the point where many of the former communal grazing areas have largely been taken over for settlement and cultivation. Livestock feed sources are under pressure, and many cattle are kept under a cut and carry system, using crop residues and any other available vegetation. Most farms have reserved a small area of their enclosed land for grazing and recreational use, and some have built terraces on their sloping land. Such areas provided a niche for the production of improved forages, and the BOA staff initiated on-farm forage trials in several woredas.

Tsetse control: Particularly in the lowlands of Humbo, Bele and Konso tsetse fly is the major problem for livestock production. The significance of the problem has increased with the adaptation of tsetse to new areas and the reduction in the potency of the locally used drugs (FARM Report, 1995). Diagnostic survey results also indicated that tsetse transmitted livestock Trypanosomiasis (locally known as Gendi) is the major problem perceived by farmers in Konso and Bele areas, with a cattle mortality rate of about 16% per annum. In view of the negative economic impact of tsetse in these areas FRP started a control trial with the participation of local farmers.
Mole rat control: Mole rats eat the roots of crops like enset, sweet potato, wheat, barley, etc. and reduce the production of these crops significantly. If there is no crop in the field, they eat grass and the soft part of any plant. FRP was, therefore, keen to assess and strengthen the local techniques of mole rat control. The project organised meetings and workshops to share the local knowledge among experienced and interested farmers and encourage them to test different possibilities for their own situations and disseminate their knowledge to others. The trial was conducted on local traps tested informally under field conditions to evaluate the strength and weakness of each type in the North Omo woredas of Ditta, Chencha, Bonke, and Konso.
Table 1  Participatory on-farm trials conducted by FRP in collaboration with other organisations (1993 – 1997)

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<tr>
<th>Woreda</th>
<th>No. of PAs</th>
<th>No. of trial farmers</th>
<th>Types of trials</th>
<th>Implementing organisation</th>
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| Offa   | 1          | 5                    | • Maize variety  
          |             |                      | • Forage Adaptation     | BoA, (FRP assisted)   |
|        | 2          | 8                    |                |                          | BoA (FRP assisted)    |
| Humbo  | 3          | 19                   | • Cotton Variety  
          | 3          | 8                    | • Cotton Variety-Rainfed  
          | 3          | 6                    | • Sweet potato Butterfly trapping with Desmodium | FRP                   |
|        |            |                      |                |                          | World Vision (FRP assisted) |
| Damot  | 7          | 11                   | • Sweet potato Variety  
          | woide 5    | 8                    | • Haricot Bean  
          | 1          | 20                   | • Maize, Haricot bean, Teff, wheat & Barley | FRP                   |
|        | 3          | 9                    | • Sweet potato Butterfly trapping with Desmodium  
          | 1          | 11                   | • Vegetable  
          | 6          | 18                   | • Forage adaptation  
          | 1          | 2                    | • Fuel saving stoves | FRP                   |
|        |            |                      |                |                          | BoA (FRP assisted)    |
| Kindo  | 2          | 6                    | • Alley cropping  
          | Koisha 3   | 9                    | • Forage adaptation  
          | 7          | 15                   | • Natural and Artificial Fertiliser on Maize  
          | 5          | 14                   | • Cotton variety  
          | 2          | 12                   | • Resource flow  
          | 2          | 12                   | • Maize variety and other crops fertiliser rate  
          | 4          | 5                    | • Cotton variety (rain fed) | FRP                   |
|        |            |                      |                |                          | BoA (FRP assisted)    |
| Arbaminc | 2          | 5                    | Fertiliser type  | BoA (FRP assisted) |
| Bonke  | 2          | 8                    | Maize Variety  | "                       |
| Boreda | 3          | 5                    | Compost rate   | "                       |
| Chencha | 3          | 16                   | Forage adaptation | "                       |
|        | 3          | 8                    | Compost        | "                       |
| Gofa   | 3          | 8                    | Forage adaptation trial | "                       |
| Konso  | 1          | 10                   | Sorghum Variety | "                       |

In order to properly manage the POFTs and to equip farmers with various tools of farmer participatory research (FPR), the project has provided training for about 327 farmers in the zone of North Omo, Konso and Derashe special woreda. This training introduced some of the farmers to POFT concepts and methods and
raised their interest in research. During travelling seminars, farmers from one area learnt about different crops, varieties, agricultural practices and pest control methods from the places visited and introduced them into their areas. The number of farmers who participated in both POFTs and training programmes generally increased from 1991 to 1995, when project activities were at their peak, and declined thereafter while the project was waiting for the preparation of a third phase (see Table 2 and figure 1).

Table 2. Number of participant farmers in POFT and training programmes

<table>
<thead>
<tr>
<th>Year</th>
<th>POFT</th>
<th>Training</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>1992</td>
<td>49</td>
<td>15</td>
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</tr>
<tr>
<td>1993</td>
<td>58</td>
<td>52</td>
<td>110</td>
</tr>
<tr>
<td>1994</td>
<td>98</td>
<td>101</td>
<td>199</td>
</tr>
<tr>
<td>1995</td>
<td>132</td>
<td>26</td>
<td>158</td>
</tr>
<tr>
<td>1996</td>
<td>131</td>
<td>95</td>
<td>226</td>
</tr>
<tr>
<td>1997</td>
<td>90</td>
<td>38</td>
<td>128</td>
</tr>
<tr>
<td>Total</td>
<td>568</td>
<td>327</td>
<td>895</td>
</tr>
</tbody>
</table>

Figure one

FARMERS PARTICIPATION IN TRAINING AND POFT

![Bar chart showing participation in POFT and training programmes from 1991 to 1997]
2. METHODOLOGY OF IMPACT ASSESSMENT

The process of the impact assessment included five stages as follows:-

- conducting a training workshop in participatory monitoring and evaluation (PME),
- formation of impact assessment multidisciplinary teams from respective partner organisations,
- preparation of a study plan, including checklists and semi-structured questionnaires,
- fieldwork: sampling and interviewing farmers and BOA key informants,
- discussion and preliminary analysis and write up of the report.

2.1. PM&E training

The participatory monitoring and evaluation workshop was held between October 27 and 31, 1997. The purpose of the workshop was to design a plan for a participatory evaluation, in order to assess the impact of the interventions of the Farmers’ Research Project. The supporting objectives of the workshop were:

- Strengthen linkages and mutual respect between the FRP and collaborating institution (GOs and NGOs)
- Learn from each others’ experiences with monitoring and evaluation (M&E)
- Understand the basic principles of M&E.
- Explain the links between M&E and the logical framework.
- Share experiences with using participatory methods.
- Identify and prepare appropriate participatory methods for evaluation purpose.
- Field test some of these methods with two farmer groups
- Design plans for evaluating the impact of FRPs interventions.
2.2. Formation of impact assessment teams
At the end of the workshop participants divided themselves into two groups and formed two main review teams. Each team designed plans for evaluating the impact of each component of the project, identified and prepared participatory methods for evaluation purposes.

Two review teams were formed. The farmers level review team was mainly responsible for assessing the impact of POFT and training on farmers, while the institutional level team was responsible for reviewing the impact of the activities relating to non-farmer training, publication and library on the staff of the collaborating organisations. The field review team of both at farmers and institutional level consisted of experts from FRP, the regional and zonal BOA, ARC, ACA and regional Bureau of Economic Development and Planning for Southern Regional State.

2.3. Preparation of a study plan and materials
The two teams met separately in order to formulate plans and develop materials for conducting their respective impact studies. The farmers level review team identified three groups to be sampled from; participating (POFT and training) farmers, non-participating farmers and key informants of the BOA. A sampling approach and semi-structured questionnaires were developed for each sample group. Comments on the semi-structured questionnaires were received from the team members and Dr. Alistair Sutherland and were considered.

After the questionnaires were finalised and farmers for interview sampled from the available lists, the farmer level review team divided itself into two sub-groups. The area to be covered by each sub-group was identified and the fieldwork was carried out in January 1998 in 13 woredas of North Omo zone and the two special woredas of Derashe and Konso. One of the sub-groups covered, Konso, Derashe, Bonkie, Chencha, Boreda-Abaya, and Soddo Zuria while the other sub
group worked in Humbo, Goffa, Kutcha, Kindo Koysha, Offa, Bolosso Sorie, Damot Gale and Damot Woide.

2.4. Fieldwork: sampling and interviewing

10% of the total farmers involved in POFT and training were sampled using a cluster/stratified random sampling method. Meetings were held at different stages of the impact assessment work to discuss the content of questionnaires and to sample participant and non-participant farmers. When sampling was completed name, sex and PA of each sampled farmer was identified.

During its field operation the farmer’s level review team interviewed 36 and 27 participant farmers in POFT and training respectively. In addition, 4 non-participating farmers living in the locality of participant farmers were taken at random from each woreda; a total of 52 non-participating farmers were interviewed (Table 3). A total of 131 farmers and key informants of woreda BOA were interviewed, of which 23 percent were women (Table 3).

Interviewing farmers required considerable time and communication skills. The team members travelled long distances in each woreda to reach to the sampled farmers. When they arrived some farmers were not found in their locality because of death, mobility and change of residence. In such cases, the team interviewed the involved farmers on that particular activity component living in the same PA.

15 key informants, one from each woreda BOA, were interviewed. The criteria for selecting the key informants included the length of time in the area, and knowledge about the purpose of FRP and the local situation. Before key informants were selected the review team had discussions with the woreda heads and concerned senior staff members about the importance of appropriate key informant selection.
Table 3: Sampled farmers and WOREDA BOA key informants

<table>
<thead>
<tr>
<th>Ser. No.</th>
<th>Woreda (District)</th>
<th>POFT M</th>
<th>F</th>
<th>Training M</th>
<th>F</th>
<th>Non-participant M</th>
<th>F</th>
<th>Key informants M</th>
<th>F</th>
<th>Total M</th>
<th>F</th>
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<tbody>
<tr>
<td>1</td>
<td>Damot Gale</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>2</td>
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<td>-</td>
<td>8</td>
<td>5</td>
<td>13</td>
<td>7</td>
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<tr>
<td>2</td>
<td>Damot Woide</td>
<td>3</td>
<td>-</td>
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<td>11</td>
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<tr>
<td>3</td>
<td>K/koysasha</td>
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<td>-</td>
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<td>1</td>
<td>-</td>
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<td>Soddo zueria</td>
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<td>Goffa</td>
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<td>1</td>
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<td>1</td>
<td>8</td>
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<td>1</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
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<td>22</td>
<td>5</td>
<td>37</td>
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<td>17</td>
<td>4</td>
<td>28</td>
<td>11</td>
<td>10</td>
<td>2</td>
<td>77</td>
<td>23</td>
</tr>
</tbody>
</table>

2.5. Discussion, preliminary analysis and write up

At the end of each day, the field teams met to discuss their findings. When the interviewing of farmers and BOA key informants was completed, both sub-groups prepared a summary on each component for each woreda. The sub-group review teams then joined and combined their summaries and produced a draft report.
Some members of the team met again to discuss the report, and how the key findings would be presented at a workshop at which the results were to be presented. In response to comments on the first draft, a further analysis of results and revision of the report was undertaken.

3. RESULTS OF THE IMPACT ASSESSMENT

The findings of the impact assessment are described from the perspectives of the three sample groups: farmers who participated in POFTs and training, non-participant farmers living nearby, and key informants from the woreda BOA. Greater detail is provided from the participant farmers, particularly from those who participated in the POFT programme, experiencing in most cases a long period of dialogue with the agricultural experts implementing the various trials.

3.1. General perspectives of POFT farmers

Table 4 summarises the responses of farmers participating in POFT to some of the key questions asked which required a “yes” or “no” answer. All of them say they are well aware of the objectives of POFTs and 92 percent of the participating farmers responded that they have benefited from the programme. 78 percent of the participating farmers also responded that they have witnessed a positive change in their livelihood as a consequence of the POFT programme.

97 percent of participating farmers indicated that non-participating farmers have shown interest in visiting their on-farm trials, while 53 percent responded that non-participating farmers are applying their on-farm trial practice in their farms.
Table 4: Response of POFT farmers to key questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know the objectives of POFTs?</td>
<td>36</td>
<td>-</td>
<td>36</td>
<td>100</td>
</tr>
<tr>
<td>Did you get any benefit from on-farm trials?</td>
<td>33</td>
<td>3</td>
<td>36</td>
<td>92</td>
</tr>
<tr>
<td>Is there a change in your life as a consequence of POFTs?</td>
<td>28</td>
<td>8</td>
<td>36</td>
<td>78</td>
</tr>
<tr>
<td>Have non-participating farmers shown interest in visiting your on-farm trial?</td>
<td>35</td>
<td>1</td>
<td>36</td>
<td>97</td>
</tr>
<tr>
<td>Are the non-participant farmers applying your on-farm practice?</td>
<td>19</td>
<td>17</td>
<td>36</td>
<td>53</td>
</tr>
<tr>
<td>Are there non-participant farmers who copied your on-farm trial activity?</td>
<td>23</td>
<td>13</td>
<td>36</td>
<td>64</td>
</tr>
</tbody>
</table>

3.2. Impact in relation to POFT objectives

Background

After the data had undergone preliminary analysis and documentation, a more systematic analysis was performed in relation to the specific objectives of POFT and farmer training.

For each objective, indicators were developed which were used to classify farmers' responses and comments recorded during the interviews.

With regard to the POFT programme the four specific objectives were identified as:

I. Improvements in farmers’ livelihood (income, food, productivity, health and safety)
II. Improvements in the development of appropriate technology
III. Improvements in farmers’ local research capacity
IV. Improvements in local technology access, multiplication and dissemination capacity

Indicators for improvements in farmers livelihood were developed as follows:
- evidence of increased productivity from POFT
• evidence of material benefit (income, food, health and safety) to the household from POFT and
• evidence of technology adoption on a sustainable bases at household level.

Indicators for improvements in the development of appropriate technology were:-
• the development of farmers’ own technology, and
• its adaptation by other non-participating farmers.

Indicators for improvements in farmers local research capacity were:-
• multiple technology options available as knowledge to participating farmers
• Increased farmers understanding and skill in formal research methods
• Farmers conducting own new experimentation

Improved local technology access, multiplication and dissemination capacity indicators were:-
• Participating farmers received visits and demonstrate technology to other farmers,
• Participating farmers multiply technology for own use and supply other farmers
• Farmers voice requests for support in research and technology supply

**Improvements in farmers livelihood**

Evidence cited from discussions with farmers in the next section clearly indicate the positive contribution of FRP POFT and training components towards improvements in farmers livelihood. 78 percent of the POFT farmers interviewed responded that there was a positive change in their livelihood as a consequence of participating in FRP POFT programme.

Cases of increased productivity and income as a consequence of POFT was amply demonstrated by Ato Eyassu Mune (cotton producer in Bele area) and Ato Bekele Anteneh (sweet potato grower in Damot Gale). Both testified that they
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<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know the objectives of POFTs?</td>
<td>36</td>
<td>-</td>
<td>36</td>
<td>100 -</td>
</tr>
<tr>
<td>Did you get any benefit from on-farm trials?</td>
<td>33</td>
<td>3</td>
<td>36</td>
<td>92 8</td>
</tr>
<tr>
<td>Is there a change in your life as a consequence of POFTs?</td>
<td>28</td>
<td>8</td>
<td>36</td>
<td>78 22</td>
</tr>
<tr>
<td>Have non-participating farmers shown interest in visiting your on-farm trial?</td>
<td>35</td>
<td>1</td>
<td>36</td>
<td>97 3</td>
</tr>
<tr>
<td>Are the non-participant farmers applying your on-farm practice?</td>
<td>19</td>
<td>17</td>
<td>36</td>
<td>53 47</td>
</tr>
<tr>
<td>Are there non-participant farmers who copied your on-farm trial activity?</td>
<td>23</td>
<td>13</td>
<td>36</td>
<td>64 36</td>
</tr>
</tbody>
</table>

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• the development of farmers' own technology, and
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• multiple technology options available as knowledge to participating farmers
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Improved local technology access, multiplication and dissemination capacity indicators were:-
• Participating farmers received visits and demonstrate technology to other farmers,
• Participating farmers multiply technology for own use and supply other farmers
• Farmers voice requests for support in research and technology supply

**Improvements in farmers livelihood**

Evidence cited from discussions with farmers in the next section clearly indicate the positive contribution of FRP POFT and training components towards improvements in farmers livelihood. 78 percent of the POFT farmers interviewed responded that there was a positive change in their livelihood as a consequence of participating in FRP POFT programme.

Cases of increased productivity and income as a consequence of POFT was amply demonstrated by Ato Eyassu Mune (cotton producer in Bele area) and Ato Bekele Anteneh (sweet potato grower in Damot Gale). Both testified that they
had experienced a significant increase in their productivity and income level as compared to the WADU time.

**Improvements in the development of appropriate technology**

Improvements in the development of appropriate technology by farmers and its adaptation by other non-participating farmers arising from POFT activities include modifications to fuel saving stoves and the mole rat trapping technologies introduced by FRP. However, although there have been improvements in the design of stoves, the general acceptance and diffusion of the stove technology by the farmers is still at a low level.

**Improvements in local research capacity**

There are many cases of multiple technology options availed to POFT farmers from which they have been able to choose the best ones for their locality. Many different crop varieties have been introduced by FRP to farmers from which they are able to conduct research in order to choose the best for themselves. For cotton, the only available local varieties were Akala and Arba and the project introduced six other varieties of stonville 2/3, Bulk 202, Laokra leaf 2, Deltapine 90, Albara 637 and Reba 50. In Konso four additional varieties of sorghum were experimented on by farmers, and in other areas several new maize varieties have been availed for farmer evaluation. The same is true to fodder species and fuel saving stove trials. Habte Hajiso is experimenting with mole rat control trap technology improvement, encourage by interaction with other farmers during the mole rat trapping trial.

Farmers understanding and skill in formal research methods has also increased significantly due to the POFT training, travelling seminars and their long years of involvement in POFT together with the subject matter specialists and FRP staff.
Some farmers are conducting their own new trials and experimentation by utilising the flora and fauna in their surrounding. For example, Ato Eyasu Munie is investigating various pest medicines (by pulverising leaves of trees).

**Improved local technology access, multiplication and dissemination capacity**

Examples of participating farmers receiving visits and sharing information with other non-participating farmers are reflected in the section below. 97 percent of participating farmers reported interest from neighbouring farmers in visiting their trials and 53 percent of them reported that at least one neighbour had started applying the new technology or technologies.

Many of the farmers with variety trials, forage trials, stove and mole rat trials are attempting, and in some cases have succeeded, in multiplying the technology for own use and to supply other demanding farmers of their locality.

45 percent of the non-participating farmers have shown an active interest in the POFT programme while 76 percent regarded the POFT and training components of FRP as useful and are willing to participate if given the chance in the future.

In some areas farmers have also started requesting technology supply of seeds through their peasant associations and the BOA, particularly the seeds of the new varieties of cotton, maize and haricot beans and forage species, introduced through the POFT programme.

**3.3. Farmer perspectives on particular technologies**

During the interviews, farmers recounted their views and experiences with participatory on-farm trials largely on the basis of experience with testing particular technologies. In order to situate impact in the context of the particular technologies, some of these views are presented below in summary form.
Sorghum varieties. Farmers who have conducted sorghum trials showed great interest because the new varieties can alleviate food shortages. Some also started producing seed of the newly introduced cultivars. One of the participant farmers, in Konso, stated that among the five varieties he selected Gambella. The positive factor that the farmer considered in choosing the variety was its good taste, good yield, early maturity and drought resistance. Non-participant farmers have also applied for seed of this variety where the trial has been conducted.

Maize varieties. A variety trial on maize was conducted in Bonke and Offa woredas. Farmers who participated in the trial preferred the variety BH140. The reason for this is that BH140 is high yielding and resistant to lodging. The farmer also stated that the result of the trial gave him an opportunity to accept the new extension system, and as a result planted improved maize varieties with fertiliser and got higher yield than before. In general, he was able to be food self-sufficient and bought a calf. Non-participant farmers showed interest on the improved varieties and are eager to plant them on their own farms.

Soil fertility. A fertiliser trial was carried out in Arba Minch zuria woreda. For this trial maize was selected as a test crop. From this trial farmers were able to learn the use of fertiliser as well as using row planting. The farmer remarked that before conducting the trial he was able to feed his family only for five months, but now he could feed his family for the whole year. Another farmer who also used manure in addition to fertiliser said that by applying manure and using appropriate cultural practices he had obtained higher yield than before and has started feeding his family throughout the year. Those farmers who did not participate in the trial showed interest after visiting his trial and some have even applied manure on their farm.

Compost trial is one of the trials conducted by farmers in Chencha, Abaya and Kindo Koisha woredas. Those farmers who conducted compost trial are able to
prepare and apply compost and realise the value of using compost. The farmers apply compost on different crops. As a result of this they have benefited from the increased crop yield and they are becoming self sufficient in food crop production for their household.

Using residual materials on farmland, and different organic matter for composting he has saved cost that could have been incurred buying fertiliser. Moreover, farmers said that compost improves the soil structure and lasts longer than artificial fertilisers. Another farmer who conducted compost trial on maize at Boreda, said that presently he is applying compost on other crops, and as a result received higher yields on maize and sweet potato sufficient to feed his 11 family members throughout the year. However, compost preparation and application is difficult and demands more labour. In comparison to the transporting of manure to the field, compost is said by farmers to be less heavy. The above experience with compost was also shared among some of the NPFs who copied the preparation and application of compost on different crops.

Teff and haricot beans Ato Ayele Baliso and Ato Gona from Surakoyo PA in Damot Woide woreda mentioned that from teff and haricot bean trials they got higher yields. Using the improved teff variety Dz. Cross 37, the yield increment was about 2.5 qt/ha above the previous one. Ato Gonna also confirmed that from the trial plot (10m X 15m) he obtained 30kg of haricot bean which is about 20 qt/ha. After the trial, participating farmers planted the above crops in a large area and multiplied the seed. As a result they became self sufficient in food and were also able to buy clothes and other necessary materials for their family. In addition to this, one of the participant farmers said that he has tried to teach non-participating farmers and had discussions with them, which led to their interest to conduct similar trials. Ato Gona also commented that “FRPs program is just a drop of honey that is being licked in bits”. The farmer commented that the trial did not cover a large area and very few farmers are involved in it.
Forage  Forage trials were conducted in different woredas (Konso, Chencha, Boreda-Abaya, Damot Gale, Goffa, Offa and Kindo Koysha). These trials were conducted to alleviate animal feed shortage caused by increased livestock population and grazing land shortage. Those farmers who conducted the forage trials showed interest and awareness due to the increase in productivity of animals. In addition to this they knew that forage legumes increased the fertility of the soil, as well as alleviating their livestock feed shortage in the dry seasons.

Ato Lebene Tirfo of Goffa and Kumalo Gerbu of Damot Gale conducted forage adaptation trials. They said that they have benefited from the trial and their burden of transporting grasses from distance places has been reduced. After the trial they planted Rhodes and elephant grasses in large areas and were able to feed their cattle. As a result they got significant production increments in milk and milk products. Moreover, Ato Lebene collected some forage seeds for further production, and gave seeds to his neighbours. He also stated that without any external support he can handle and continue to produce more forage crops for his cattle.

Some farmers saw forage legumes under a maize crop in Boreda. The farmer who participated in this trial commented that he got two benefits: increased yield of maize and increased feed for his cattle, and said that he could continue to produce forage seeds without any support. Non-participant farmers also showed interest in forage crops.

Cotton  Cotton variety and pest control trials were carried out in Humbo and Kindo Koisha woredas. Farmers showed great interest in the trials, particularly for the new varieties, which can alleviate the major production constraints. During discussions farmers indicated that they gained knowledge on how to run such trials and became aware on how to select high yielding cotton varieties using their own criteria. Using the improved cotton varieties, farmers were able to produce more yield. A farmer from Humbo-Abella stated that before participating
in the trial the yield was below 2 qt (200kg) from a quarter of a hectare. After the trial using the improved cultivation of cotton they were able to produce about 8qt from the same land.

The general mood of the farmers is amply demonstrated by Ato Eyassu Mune’s comment that:

“During the cotton production of WADU’s time farmers used pesticides and were able to produce about 20 qt/ha. After the FRP came, farmers involved in the trial started producing more. By using the improved varieties of cotton the average yield reached almost 48qt/ha with minimum chemical application. As a result of this, farmers got high benefit and expanded their farm and got more yield. Some of the farmers have already bought goats, as well as constructed houses from the money they got from the result of the trials”. Ato Eyob Beke said after harvesting and selling the lint from the improved varieties he has already bought oxen, paid taxes and bought clothes for his family.

Farmer preferences of the improved cotton cultivars vary form place to place. For instance Stonville is valued not only for its high yielding quality, but also for its drought, heavy rainfall, disease and pest resistance. The boll is also big and the colour of the lint is white. Akala and Arba varieties are preferred by the majority of the farmers for different reasons such as soil type and moisture availability.

Non- participating farmers appreciated the cotton trial and became aware of it. The new varieties have been adopted by other villagers who have started growing the improved varieties that they got from participant farmers. Despite this efforts and short-term benefits, knowledge about the trial is not widely spread within the programme area.

Sweet potato  Sweet potato is one of the important crops in North Omo, specifically in Wolaita, where the yield potential was tremendously decreased as
a result of sweet potato butterfly, which reduced the productivity potential of the local cultivar. To overcome these problems, a variety and biological pest control trial was conducted in Damot Gale, Damot Woide and Soddo Zuria woredas.

As a biological control of sweet potato butterfly, the effect of Desmodium sp.-on sweet potato butterfly trial was conducted in Humbo, Damot Gale and Soddo Zuria woredas in collaboration with World Vision. The result indicated by participant farmers is that Desmodium effectively traps sweet potato butterfly and the larvae. For example, Ato Feleke Dache, from Soddo Zuria woreda, mentioned that he harvested sweet potato while other farmers lost their crop completely. He also maintained planting material for the coming season and also distributed this to other farmers. In addition to this, when other farmers faced food shortage, he was able to feed his family and has got extra feed for his animals from the Desmodium.

Ato Bekele Anteneh from Damot Gale woreda said that sweet potato production increased due to the effect of Desmodium and gained 200 birr by selling the product from 10X18 = 200m² plot of land. He also added that the expenses of pesticides and sprayers were not incurred, increasing his profit.

Some participants commented on the design of the trial, suggesting that planting Desmodium on the border of sweet potato field is much better than intercropping it. This shows that they are highly oriented to research. Some non-participant farmers were interested to copy the trial and they took seeds and seedlings from participant farmers.

Fuel saving stoves A fuel saving stove trial was conducted in Damot Gale and Soddo Zuria woredas with the objectives of over coming fuel wood shortage, decreasing labour burden of women and making them productive. As a result of the trial, women were able to choose better stoves that save fuel wood, time and labour. W/o Terabe Dana from Soddo Zuria woreda mentioned that the Burayu
type fuel saving stove is the best and she has constructed one in her house. This stove protected her children and animals from fire hazard, kept her health and neatness because she is not exposed to smoke, saved her time and labour by cooking different food types at the same time, is comfortable for pregnant women to use, saved fuel wood and reduced the time spent for searching and fetching fuel wood. W/o Buntaze Sadebo said that because of the swampiness of the area during winter season it was too difficult to prepare food by the local stove (Choche) but after the trial using Burayu and Wollo type fuel saving stove, they solved their problem. She also constructed a bed, table and bench with mud, and improved her house management.

There are a few non-participant farmers who copied the trial results and started constructing the stoves. But in general there is a low acceptance rate both in Damot Gale and Soddo Zuria. Low acceptance is due to problem of kitchen space, resources and perhaps expectation of support from outsiders.

**Vegetable gardening** A trial was conducted in Damot Gale woreda for the purpose of income generation and to involve more women in agriculture. As a result of the trial they have gained knowledge on how to generate income by growing vegetables.

W/o Shashe said that she sold her vegetables and bought chicken and cloths for herself. The rest was used to support her family. She also understood that women can actively participate in agricultural activities.

Generally POFTs changed farmers’ attitude, behaviour and contributed to increased agricultural productivity.

### 3.4. Perspectives of farmers on training
FRP has successfully carried out a range of training activities, with the overall aim of institutionalising FPR in the project area. The training component has played an important role in introducing approaches and methodologies for farmer participatory research to key collaborator institutions primarily the Bureau of
Agriculture, and Research Centres of Awassa, Areka and Nazareth. FRP training programs have seven sub-components; PRA, POFT, travelling seminars, visits, field days, library, and workshops.

Target audiences have ranged from farmers, NGOs and GO officials and policy makers. Specific aims have been the creation of awareness of the participatory approach, building capacity for FPR, strengthening linkages and developing harmony between key actors, and incorporating FPR into the activities of concerned organisations.

Of the total 27 trained farmers interviewed, only 19 percent had some knowledge about the subject matter that they were trained in prior to the training, while 81 percent were unaware of the subject prior to their training (Table 5). 85 percent of the farmers trained say they have transmitted their knowledge to non-participating farmers, while 78 percent of the trained farmers have witnessed non-participating farmers applying this knowledge.

52 percent of the farmers participating in training expressed the opinion that the training has achieved its objectives while 48 percent expressed the contrary opinion.

Table 5: “Yes/No” responses of trained farmers to impact questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you told non-participating farmers about your training?</td>
<td>23</td>
<td>4</td>
<td>27</td>
<td>85</td>
</tr>
<tr>
<td>Have they tried to apply what you told them?</td>
<td>21</td>
<td>6</td>
<td>27</td>
<td>78</td>
</tr>
<tr>
<td>Did you have any knowledge about the subject matter that you were trained in before?</td>
<td>5</td>
<td>22</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>Has the training achieved its objectives?</td>
<td>14</td>
<td>13</td>
<td>27</td>
<td>52</td>
</tr>
</tbody>
</table>
3.5 Impact in relation to training objectives

Each farmer training event had specific objectives, but the overall objectives relating to training were similar to that of the POFT programme. Training was expected to result, through the imparting of skills and knowledge, to the adoption of new technology leading to livelihood improvements. It was also expected to encourage and empower farmers to engage in more research activities and share their knowledge with other farmers.

Indicators developed for assessing the impact of the training provided, includ the following:-

- Technology adoption and adaptation,
- Increased productivity from the farmer training.
- Evidence of material benefit from the farmer training
- New alternative technologies available as knowledge to participating farmer
- Farmers able to judge which of the alternatives are worth trying out; technologies seen but rejected before trying them out.
- Farmers conducting own new experimentation after training,
- Farmers have expanded knowledge & understanding of local problems.

The examples presented under travelling seminars, of farmers' responses to questions about training, contain supporting evidence for most of the indicators listed above. Below is a brief summary of some of the evidence supporting impact against these indicators.

**Technology adoption and adaptation**

**Improved enset management by Derashe farmers:** After a travelling seminar to enset growing areas of Sidama, Gurage & KAT Derashe farmers learned a better way of enset processing; copied improved planting & management methods; started identifying diseased enset plants and protected their enset plantation by uprooting infested plants from the farm lands. Regarding technology adaptation, after Goffa farmers visited to Konso, they used vetiver grass instead of stone for
terracing to alleviate the stone shortage in their area, planting vetiver grass on the border of their farm.

**Increased productivity from the farmer training.**

Goffa farmers adoption of stone terraces after visiting Konso resulted in soil fertility improvement and production increases.

**Evidence of material/benefit from the farmer training**

See Konso visit to Ghibe River reported below

**New alternative technologies available as knowledge to participating farmer**

Improvements in local (farmers') research capacity was hard to affirm as an impact of training, but after visits many new alternative technologies became available as knowledge to participating farmers, such as composting, tsetse control, soil conservation and new types of fruit trees and forage crops.

**Farmers able to judge which of the alternatives seen are worth trying out and reject some before trying them out.**

It was not clear from the records of discussions with farmers if they were better able to judge which of the alternative technologies would be worth trying out after their visits.

**Farmers conducting own new experimentation**

Ato Dawit Ashengo, one of the Chencha participants in a travelling seminar, conducted compost trial on his own initiative to compare the effect of compost and chemical fertiliser on teff.

**Farmers have expanded knowledge and understanding of local problems.**

The PRA training helped the farmers to collect and analyse their situation using the available local materials. Ato Bekele a farmer from Damot Gale told us that by
drawing maps of his PA he developed self-confidence and started to feel that he knows something.

**After training farmers received visits and shared information with other farmers:**
85 percent of the farmers trained said that they have transmitted their knowledge to non-participating farmers, while 78 percent of the trained farmers have witnessed non-participating farmers applying this knowledge.

**Farmers trained take on training role motivated to defend new technology and demonstrate to and train farmers**
Ato Wolallo, a Konso farmer who participated in the workshop in Sodo & Chencha, on mole rat control, has trained 38 NPFs on how to make traps. Ato Mada Malla in Chencha trained other farmers in compost preparation, at their request, after they noticed changes on his farms and other participating farmers.

3.6. Impact in relation to training activities

**Travelling seminars**
Of the range of training provided to farmers, travelling seminars provided the largest number of enthusiastic assessments by the farmers interviewed. Travelling seminars were mainly intended to assist farmers and students to travel to various places with specific objectives in mind. The trips were intended to create an opportunity to see different agricultural systems and associated practices, including indigenous and introduced knowledge and technologies in use to tackle specific problems. This, in turn, was expected to increase the interest of farmers in research and broaden their knowledge of appropriate local and improved technologies which might be applied in their own local areas. Several such travelling seminars were organised for farmers of Wolaita, Konso, Arbaminch Zuria, Sura and Goffa.
Origins of the community based tsetse and trypanosomiasis pilot programme: Trypanosomiasis was one of the most important problems in Konso special Woreda. The mortality rate of livestock and other animals was very high due to this disease. Farmers had lost many of their animals and as a result farmlands were not ploughed, affecting crop production very much. A travelling seminar was organised for Konso farmers to visit the joint ILCA/ILRAD tsetse control research pilot project in the Ghibe river valley. Konso farmers gained knowledge from Ghibe farmers about controlling tsetse fly, a transmitter of Trypanosomiasis. Two Konso farmers (Ato Seyoum Lemeta and Ato Amare Asefa) reported to the review team that after the visit to Ghibe valley the knowledge gained about the causes of Trypanosomiasis led them to search for solutions. As a result of the visit, Konso farmers collaborated with FRP and BOA and launched a community based tsetse control pilot programme. Delthamethrin (spot-on) was identified as an effective chemical control and was accepted by the community. Testing proved Delthamethrin to be very effective in controlling Trypanosomiasis in Konso. Farmers reported that as a result of the controls, milk productivity increased from 0.5 to 1.5 litres of milk per day. Moreover, abortions and expenses for veterinary services had decreased. Before the chemical was introduced farmers had been treating their animals every week or fortnight. But, afterwards the period between treatments extended up to 7 months. This solved the draught power (oxen) shortage and improved crop production. Konso farmers said they have benefited very much from the result of the pilot programme work. According to Ato Asefa because of this programme, the livestock population in Fuchtcha had risen from 90 to 400 cattle.

Non-participant farmers of the area became aware of the new chemical control method through formal and informal discussions with participant farmers at social gathering places, during Edir, and recreational drinking. After creation of awareness, the non-participant farmers permitted their animals to be treated by spot-on chemical. When farmers saw the effectiveness of the control method,
they joined traditional *Fora* committees and contributed money to purchase the chemicals so that supply could be sustainable.

➢ **Goffa farmers visit Konso and Wolaita:**
The visit to Konso was very important for Goffa area farmers, who had a problem with soil erosion. When Goffa farmers saw the terraces in Konso they were impressed and interested in the local water and moisture conservation methods. Motivated by what they saw, upon returning to their area Goffa farmers started to construct terraces on their farms. At present many farmers in Goffa are constructing terraces and planting vetiver grass. As a result, the soil moisture conservation and soil fertility has improved along with productivity. For example, Ato Samuel informed the review team that teff production on his farm has increased two fold. In addition, the performance of the newly introduced chat crops has been improving. Non-participant farmers have also become aware of this practice, and are now constructing terraces to save their soils from erosion.

➢ **Chencha farmers visit**
Ato Dawit Ashangie, a known independent research farmer appreciated the travelling seminar and mentioned the benefit he gained from learning about compost. “I prepared compost and applied it on different crops. As a result of the compost preparation not only I gained knowledge but also the yield of crops on my farm increased very much. I am food self sufficient, I have never faced food shortage because I produce enough food for my family and myself. All this is the result of the training and travelling seminars”. Ato Dawit conducts trials on his own to compare the effect of compost and chemical fertilisers on teff and other crops. He has control plots, plots with compost, and plots with both compost and chemical fertiliser. Farmers prepare compost from different kinds of plants (except eucalyptus and junipers), house refuse, and other organic materials. Farmers who apply compost increased the yield of wheat, potato and enset two fold. Therefore, these farmers are able to feed their family throughout the year without food shortage. Ato Mada Malako from Chencha said “by applying compost, I am getting good yield from my major crops. Even if I am told not to
prepare and use compost, I will never stop this work”. Non-participant farmers in Chencha showed great interest in compost preparation because they have noticed the changes in participant farmers lives.

Ato Dawit disclosed that the effect of compost is more significant than that of chemical fertilisers. Moreover, Chemical fertilisers are expensive and are not always available when the farmers want to use them.

➢ North Omo farmers visit to other enset growing areas:
Derashe farmers who visited enset growing areas of Sidama, Gurage and Kembata have learnt a better way of enset processing. They have also copied improved planting and management methods. In general their cultural practices are upgraded and they are able to identify diseased enset plants at an earlier stage. This helped them to protect their enset plantation by uprooting infested plants from farmlands.

Most farmers who participated in the travelling seminars have introduced new crops and different agricultural practices. For example, new types of fruit trees (avocados, mango, passion fruit, apple, Kasmire, mandarin, and orange), forage crops (elephant grass and alfalfa), and better yielding field crops have been introduced through the travelling seminars. Farmers have also learnt compost preparation. For example, W/o Belainesh told us that she covers the expenses of books for her school children by selling the newly introduced passion fruit. She has also benefited by constructing a bed, shelf and stoves from mud bricks. Non-participant farmers are also interested in what she is doing and are trying to copy from her.

Training on fuel saving stoves
Fuel saving stove training has played a role in the introduction of preferable fuel stove types creating an attitudinal change in both participant and non-participant farmers. However, behavioural change has been slow, and to date very few interested women farmers have copied the preferred stove models. Non-
participant farmers say they could not easily copy and build the newly introduced stove models because preparing the mud and building the stoves is tedious and difficult.

OFT and PRA training courses
The participant farmers say they gained knowledge. A change in the farmers' attitude was reported after the PRA course. One of the participant farmers (Ato Bekele Anteneh) from Damot Gale told us that "by drawing maps of our Peasant Association we have developed self-confidence and started to feel that we know something. The PRA training course helped us to know more about our areas and the problems we encounter".

Mole rat training course and workshop
Mole rats are one of the most serious agricultural problems in some areas. To address this problem, training and workshops were held in Konso and Chencha. This helped the farmers to share experience on mole rat control methods, to understand the biology of this destructive animal and also to know how it attacks root and other crops.

The previous mole rat control methods were time consuming and difficult. Farmers used to spend 3-4 days digging a mole rat hole, and used to pay 7-10 Birr for mole rat hunters. The flooding and fumigation methods were not as effective as the Ditha-Chencha and Bonkie, Boreda mole rat traps. Combining the use of the above trap models farmers are reporting that mole rat damage has decreased. For example, a farmer from Konso (Ato Wollolo) reported that only after the training course was he able to trap moles. Ato Wollolo claimed that he has trained 38 Konso farmers on how to make traps and control mole rats. The trained farmers are also now applying this technique and mole rat damage is decreasing.
3.7 Perspectives of non-participant farmers

Information gathered from the 52 non-participating farmers interviewed revealed the following responses to questions requiring a "yes/no" response (Table 6):-

- 67 percent of non-participating farmers have heard of the Farmers Research Project of FARM Africa while 33 percent have not heard of it.

- 76 percent of non-participating farmers expressed that the training and POFT components of FRP are important, while 24 percent of them considered them unimportant.

- 89 percent of non-participating farmers responded that they are willing to participate in FRP activities, if given the chance, while only 11 percent are reluctant to participate in FRP activities in the future.

- 71 percent of non-participating farmers indicated that they have noticed positive changes in the livelihoods of participating farmers.

- Only 45 percent of non-participating farmers have ever discussed about FRP work with participant farmers while 55 percent have never done so.

Table 6: Response of non-participating farmers

<table>
<thead>
<tr>
<th>Ser No.</th>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Have you ever heard of FRP of FARM Africa?</td>
<td>37</td>
<td>18</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>Are POFTs and training components important?</td>
<td>42</td>
<td>13</td>
<td>55</td>
<td>76</td>
</tr>
<tr>
<td>3</td>
<td>Are you willing to participate in the future in POFT &amp; training components?</td>
<td>49</td>
<td>6</td>
<td>55</td>
<td>89</td>
</tr>
<tr>
<td>4</td>
<td>Have you ever discussed about FRP work and its results with participating farmers in your locality?</td>
<td>25</td>
<td>30</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>Have you ever noticed changes in the livelihood of participating farmers as a result of their involvement in FRP components?</td>
<td>39</td>
<td>16</td>
<td>55</td>
<td>71</td>
</tr>
</tbody>
</table>


Soil fertility: In the fertiliser trial which was carried out in Arba Minch Zuria Woreda, one of the non-participant farmers said that Ato Admassu Wonbera who applied manure and chemical fertiliser on his maize field got higher yield and constructed a big store for his harvest. The result of this trial also created awareness to other NPFs. In general farmers were able to select the best varieties which yield well, and are drought resistant, early maturing and marketable.

Forage: A non-participant farmer in Damot Gale woreda, particularly form Warbira PA, said he has already copied Ato Kumalo’s experience and started planting different species of forage crops such as elephant grass, alfalfa, silver and green leaf Desmodium.

3.8 Perspectives of key informants
All the fifteen key informants (100%) responded that they are well aware of FRP objectives and its activities. They further testified that FRP training has positively changed the attitude of participant farmers.

- 67 percent of key informants said that they have come across other non-participating farmers whose attitude has changed as a consequence of getting knowledge from their neighbour who participated in FRP training programmes.

- 33 percent of key informants believed that FRP activities can be sustained and last without any outside help from now on, while 67 percent responded to the contrary.

Most of the key informants insisted on the continuation of outside help for some years to address the shortage of some important inputs such as seeds which other GOs such as BOA are unable to supply at present.
### Table 7: Response of Woreda BOA key informants

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>Percent</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know anything about what FRP is working?</td>
<td>15</td>
<td>-</td>
<td>15</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think FRP training have changed the attitude of participant farmers?</td>
<td>15</td>
<td>-</td>
<td>15</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you know farmers who have changed their attitude as a result of FRP training?</td>
<td>15</td>
<td>-</td>
<td>15</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you know any non-participant farmer in training whose attitude has changed as a consequence of getting knowledge from his neighbour who have participated in any type of training?</td>
<td>10</td>
<td>5</td>
<td>15</td>
<td>67</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Do you think the activities of FRP can long last without any support of outsiders from now on?</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>33</td>
<td>67</td>
<td></td>
</tr>
</tbody>
</table>
4. CHALLENGES AND LESSONS LEARNED

4.1. Challenges

The constraints faced in the smooth undertaking of FRP's POFT and training programmes for farmers have been many. They include cultural barriers, institutional collapse and inertia, climatic shocks, poverty, shortage of land and essential inputs, inappropriate selection of trial types, reluctance of participating farmers to share experiences with non-participants, high labour demand of some activities and attacks by wild animals and pests on trial plots.

The cultural barriers relate particularly to societal norms relating to gender roles. Women's lack of involvement in decision making and some agricultural activities has resulted in a rather low female participation in the POFT programme. Cultural attitudes, such as the unacceptability of men carrying and transporting manure from their residence to outer fields, have also been a barrier to more widespread application of organic manure technologies at farm level.

Institutional constraints include staff turnover and consequent delays in the decision making of partner government organisations and, the lack of follow-up and supervision from collaborating institutions which affected the actual implementation of FRP POFT and training programmes. The lack of co-operation from peasant association officials to help participant farmers to disseminate their knowledge to non-participating farmers is another constraint. Changing economic policies, which have resulted in the collapse of many credit and marketing services, have also made it difficult to achieve high levels of uptake of technologies which require external input and marketing support.

Erratic rainfall and the subsequent damage it inflicted on trial crops coupled with shortage of land, seeds, oxen, small farm implements and wild animal (porcupines and monkeys) attack on trial plots made the smooth functioning of the research process difficult, and in some cases acted as a discouragement to all parties.
It is the poorest farmers who are more reluctant to volunteer for involvement in POFT activities, and the first to drop out once selected. This presents a special challenge to a programme which at the start targeted poor farmers.

Inappropriate selection of trial types (such as the Hanaze alley cropping trial) and reluctance of some participating farmers to share their knowledge and experiences to non-participating ones, have constrained the uptake and smooth dissemination of some of the POFT technologies to a wider audience of farmers.

Compost preparation and its transportation are very laborious, cumbersome and tedious. This frustrates farmers and decreases their full participation in these important but labour consuming initiatives to improve soil fertility.

4.2. Lessons learned
The most important lessons drawn from FRP's seven years of engagement in farmers POFT and training components are the following:-

1. Farmers clearly associate success of a POFT with their ability to get sustainable access to the inputs required after the new technology has proved to be useful to them. In this respect, there appears to be great scope for linking the outputs from a POFT programme to the National Extension Programme for that particular woreda or agroecological zone.

2. Not all of the farmers experiences were positive, in a few cases the technology chosen was not suitable (e.g. alley cropping and composting in some areas), or while giving higher yields also involved more laborious operations. Even with farmer participatory research, there is a risk that researchers will remain prescriptive, and farmers will agree to things which they do not fully understand.
3. For some of the farmers, participation in the trials was itself regarded as costly, demanding more labour and time. 58% of the farmers reported knowing of at least one farmer who had dropped out of the POFT programme. In some woredas farmers saw a disadvantage, saying that by participating in POFT programme, the PA had excluded them from involvement in other agricultural programmes (credit and training), saying that they have already benefited from the POFT. Again this points to benefits from linking a POFT programme more closely with NEP and other agricultural programmes at woreda level.

4. There is a danger of over-extending the POFT research programme, particularly if the BOA management is not in a position to allocate staff and resources for follow-up due to other commitments, which are seen as more pressing. Future POFT activities should be planned within the resources of the BOA and other implementing agencies.

5. Other issues related more to POFT implementation include: limited participation of other household members (women and children) in the trials, limited data due to the produce being consumed as early food, lack of clarity regarding decision making at household level during trial implementation, and lack of clear guidance on how to select farmers.

6. Without a significant increase in professional resources allocated to on-farm trials, and appropriate orientation and equipping of the human resources allocated, the issue of scaling up the POFT programme and extrapolating the results to other areas cannot be addressed.

7. Farmers can be very effective trainers and demonstrators of new technology. However, those who participate in the training do not always share with others on their return from training. Lack of attention when selecting who will
participate in training, and lack of preparation of the participants to share effectively with others afterwards, can be costly oversights.

8. Travelling seminars have proved a very effective method for encouraging farmers to try out new technologies using their own resources, adapting them to their local conditions. Participation in this programme has raised expectations. How to make these activities more sustainable is a challenge.

9. It is important to make follow-up on training of farmers in order to assess the impact and the implications for further research and training. If the follow up is done at the end of the project, it is too late to make improvements to the project outcome, although the results will be useful for other ongoing and future programmes. How best to do this follow up is a challenge.

10. Methods for the selection of trainees (including selection criteria) and methods of identifying demand for farmer training require to be further refined, in order to improve the impact of training.

5. CONCLUSION AND RECOMMENDATIONS
5.1 Conclusions
Most of the farmers who participated in the POFT and training programmes of FRP have been made more aware about the agricultural research process, attitudinally changed, more knowledgeable and are actually experiencing the beneficial impacts of technical innovations. Improvements in farmers’ livelihood, local farmers’ research capacity and the development of technology are reported by both participating farmers and woreda BOA key informants.

Moreover, despite some constraints and challenges, and the need to institutionalise project endeavours in a sustainable way, considerable success has been achieved by FRP in its effort to realise the objectives set for POFT and farmer training activities.
Efforts made by the project and participant farmers to disseminate the methodology and technology of POFTs to a wider audience have met with some success, and these efforts are ongoing as the project is currently in the consolidation and dissemination phase.

5.2. Recommendations

In this impact assessment we will leave the reader with the main challenges and lessons learned, and resist making detailed recommendations. However as we have been discussing the "Farmers' Research Project", it is appropriate to give farmers the final say. From the challenges and constraints faced so far, the following issues were raised by farmers to be considered and solved in the future:-

**POFT programme:**

- Supply of seeds of new varieties and species on a sustainable basis is a priority,
- involvement of larger numbers of farmers in the trial programme should be aimed for if it is to have greater impact,
- more follow-up, particularly during the first season of trial implementation, is required
- There is need for government organisations, such as the BOA to become more actively involved in the POFT programme and follow up in terms of providing the required inputs.

To quote a farmer group discussion in Humbo "the project should go ahead with its training and POFT activities until it achieves its objectives. There is a problem of cotton seed shortage. We have been asking BOA and FRP to supply us with the selected cotton seeds, but we could not get them to date. Therefore, unless
this problem is solved we do not think the programme has achieved its objectives”.

**Farmer training programme:**

- Those who have been trained should be encouraged to visit and share with others what they have learned,
- the trainers should make follow ups of the trained farmers in order to see what farmers have done with the training and what problems they are facing.
- Whoever is responsible should be careful on how farmers are selected for training.
- Participants on training courses should be of good health, able to communicate and not too old,
- Where necessary training should be followed up with provision of the necessary inputs, including tools
- For sustainability, the BOA should provide the support for sustainable use of new technologies introduced in training in case FRP finishes.
III. Attitudinal and behavioral impact assessment.

14. Have you had any knowledge about the subject matter you have been trained before?
15. What are the changes the training brought on your knowledge and know how?
16. If no changes are brought by your training what are the constraints?
17. What was the objective of the training?
18. Has the training achieved its objectives?

**Semi-structured questionnaire for non-participating farmers**

1. Background information
2. Name of respondent ___________________________
3. Age ______________ Sex ______________________
4. Woreda __________________________
5. Peasant association __________________________

**List of questions asked:**

II. General

1. Have you ever heard of FRP of Farm Africa
   Yes [ ] No [ ]
2. If yes what do you know about FRP?
3. How did you know about FRP?
4. For how long did you know FRP?
5. Can you tell us what FRP is doing in your locality?
6. What do you understand by POFTs and the training component of FRP?
   6.1 POFTs
   6.2 Training components
7. Are they important and useful?
8. If yes why are they important and useful?
9. If no, why are they not useful?

III. Impact assessment

10. Why didn’t you participate in FRP activities?
11. Are you willing to participate in the future if given the chance?
12. Have you ever discussed about FRP work and its result with participant farmers in your locality?
13. If yes, what have you gained from the discussions with them?
14. Have you ever noticed changes on participant farmers as a result of their involvement in FRP components?
15. If yes, what are the changes you noticed on them?
16. Which components of FRP activities are the best and preferred by you? List them in the order they are important for you.
17. What mechanism do you recommend to sustain the adopted technology of FRP in the future?