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# Review of Participatory Agricultural Research Approach and its Importance in Ethiopia

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**Abstract**
The current popularity of the farmers' participatory approach represents a fundamental shift of attitudes and approach in the agricultural research and development process. Within a farmer participatory approach, farmers' needs and demands become the driving forces, and the constraints of the systems are the ability of the support to respond effectively to these demands. This involves the development and dissemination of technological options with an active participation of the client farmers at all stages. It could be concluded that, the benefits of participatory research approach includes development of farmers' ownership of new technologies being tested and transferred; raising level of farmers' awareness and enhance their income and technical and social skills; mobilization of farmers' indigenous knowledge available within local communities for research and development planning and empowerment. Therefore, proper implementation of participatory research in research and development programs will bring sustainable development and benefit specific to the needs and conditions of farmers particularly for small scale and resource poor farmers like Ethiopia, who live in complex subsistence and risk prone environments.
**Keywords**: Participatory, smallholder farmers, improved technologies, Ethiopia

## INTRODUCTION

Smallholder agriculture is the most important sector of Ethiopia's economy. Agriculture is the main sector of the Ethiopian economy and contributes about 41% of the GDP, offers 70% of raw materials requirement of the country's large-and medium-scale industries, generates more than 85% of the foreign exchange earnings and employs about 80% of the population (CSA, 2011). Endowed with wide ranging agro-ecological zones and diversified resources, Ethiopia grows different types of cereals, fiber crops, oil seeds, coffee, tea, flowers, fruits and vegetables. The country has the largest livestock population in Africa. Fishery and forestry resources are also significant (MoFED 2007). Growth in agriculture is fundamental to the overall economic growth because of the large share of agriculture in the economy.

The low productivity of the sector has made it difficult to attain food self-sufficiency at both national and household levels (Million and Belay, 2004). In order to avert this low productivity, the government has put agriculture at the heart of its policies so that it accelerates economic growth and development. The Ethiopian government devotes considerable resources to research and extension in view of encouraging small-scale farmers to increase their productivity and to enable them achieves food self-sufficiency.

In this regard, several improved agricultural technologies (improved crop varieties, agronomic practices, pre and post-harvest technologies, improved breeds of cows and improved farm equipments) have been introduced, evaluated and made ready for users through the agricultural research system of Ethiopia. However, these improved agricultural technologies are not widely adopted and used by farmers in different parts of the country as expected. For instance, Epoug (1996), indicated that only 10% of farmers in Africa had adopted new technologies. This clearly shows that, technology generation and transfer is not an end by itself in any research endeavor unless it is demand-driven and client oriented and finally utilized by end users, in this case farmers.

Today farmers' involvement in research is not a new concept. Experience in Ethiopia and elsewhere has shown that innovations/technologies that are developed in research stations without participation of farmers are often refuted by farmers. This is due to the fact that, innovations which were developed without the involvement of farmers have little chance of meeting actual farmers' needs (Chimdo *et al*., 2005). In a nutshell, in the past, farmers were often overlooked in technology development process despite their rich experience and knowledge (Abera and Habtamu, 1998).

Participatory research approach emerged as a response to the limitations of earlier top-down agricultural research approaches (conventional research) that often failed to deliver significant improvements in levels of well-being for the poor and subsistence farmers. Development, adoption and use of technology need to be tailored to meet their specific needs and conditions of farmers particularly for small scale and resource poor farmers, who live in complex, risk prone environments (Chambers *et al.,* 1989). Hence, one of the strategies currently adopted to form strong alliances with farmers in the process of making agricultural research and extension client oriented and demand-driven in agricultural research and development system is the adoption of participatory agricultural research approaches like the establishment of Farmers' Field Schools (FFS), Farmers' Training Centers (FTC) and Farmers-Research-Groups (FRGs) approaches.

Therefore, this deskwork would give emphasis for overview of participatory agricultural research and

 

its importance as well as associated problems in Ethiopian context. It would help to inform main actors i.e. agricultural research institutes, ministry of agriculture, agricultural universities and non-governmental organizations (NGOs) working in the area to see and revise their method of acting towards farmers interests and incorporate farmers' needs at the grass-root level in to their development plans.

***Objective***

The general objective of this seminar work is to review participatory agricultural research experiences and its importance in Ethiopian context.

The specific objectives are:

- To review the overall experiences of participatory agricultural research in Ethiopia,
- To review and describe importance of participatory agricultural research in Ethiopia,
- To review and describe problems associated with participatory agricultural research.

## OVERVIEW OF PARTICIPATORY AGRICULTURAL RESEARCH

***Basic Concepts and definitions***

**Participation:** It may be hard to give a single definition of participation as the practice and assumption or theories differ considerably (Lilja and Ashby, 1999). Participation can be any 'voluntary or other forms of contributions by rural people to pre-determined programs or project' like participation in a survey, serving as key informant, or participation in an experiment which is researcher-managed trials. Hence, participation for this deskwork purpose is "any voluntary cooperation or collaboration and contributions of farm households to any research and development programs or projects".

**Participatory:** The term participatory development has been defined as involving users and communities in all stages of the development process (Narayan, 1993).

**Participatory Research (PR):** According to JICA FRG Guideline (2009), PR is a research typology that enables clients to involve at all stages of the research process taking the leadership in making decisions. In the context of agricultural research, PR promotes the idea of joint needs assessment (problem identification), designing of solutions and/or strategies, conducting of experiments/trials, validation, monitoring and evaluation and transfer and utilization of technologies. Participatory research is a learning forum for sharing traditional and modern technology to improve the production and livelihood of farmers (Chimdo *et al*., 2005, Johnson *et al*.).

**Degrees of participation:** degree of participation may vary according to nature of research topic, level of researchers' facilitation skills, experience of farmers in on-farm trial and level of mutual trust between researchers and farmers. The level of participation is often described by a scale as researcher managed, consultative, collaborative and farmer managed.

**Application areas of PR:** According to Selener (1997), participatory research approaches have been developed and applied in four broad areas: (1) community development, (2) action research in business and industry organizations, (3) action research in schools and (4) farmer participatory research. Participatory research emerged as a response to the limitations of earlier top-down agricultural research approaches that often failed to deliver significant improvements in levels of well-being for the poor in complex, risk-prone environments (Chambers *et al.* 1989; Conway 1997).

**Measure shifts in paradigm:** The salient feature of the PR approach is the reversal of learning, where researcher and extension workers are learning from farmers. The key elements of the new paradigm are to put emphasis on people rather than 'things', to decentralize, empower the participants, to value and work on what matters to participants and to learn from the beneficiaries rather than to teach them.

Table 1: Measure shifts in paradigm

| Attributes | Prior to Participatory Research (Conventional) | Participatory research (PR) |
|---|---|---|
| Mode | Blueprint, supply, push | Process, demand-driven |
| Key words | Planning, transfer, farmers | Participation, empowerment, rural, community |
| Goals | Pre-set; closed | Evolving; open |
| Decision making | Centralized | Decentralized |
| Methods, rules | Standardized; universal | Diverse; local |
| Analytical assumptions | Reductionist | Systems; holistic |
| Interaction of professionals with people | Instructing, motivating | Enabling, empowering, facilitating |
| Local people seen as: | Beneficiaries, passive | Partners, actors |
| Outputs | Uniform | Diverse: based on capabilities |
| Planning and action | Top–down | Bottom–up |

Source: Anandajayasekeram *et al*., (2008).

 

***Evolution of Participatory Research Approach***

**Worldwide overview**

The systems oriented participatory approaches to technology development and dissemination emerged as a result of the realization that the Transfer of Technology (TOT) paradigm of industrial and Green Revolution agriculture had not worked well within the complex, diverse and risk-prone agriculture prevalent in the semi-arid, sub-humid and humid tropics (Anandajayasekeram *et al*., 2008). Historically, non-adoption of recommendations was attributed to farmers' ignorance, to be overcome through more and better extension, and then to farm level constraints, with the solution in easing the constraints (Chambers 1989). The reasons for non-adoption of technologies are well documented (Norman *et al*. 1994; Anandajayasekeram 1996; Matata *et al*. 2001). However, evidence shows that farmers are far more knowledgeable and better informed than agricultural professionals used to suppose; and farming conditions are, and will remain, different from those prevailing at research stations. The term Farmer Participatory Research (FPR) was coined by Farrington and Martin (1987). FPR emerged as a response to the limitations of earlier agricultural research and extension approaches such as on-farm and farming systems research and the 'Training and Visit' extension model. In these earlier approaches, farmers were often considered as research subjects, components of the system under investigation, or passive recipients of extension messages. FPR has received increased attention and recognition since the 'Farmer First' (Chambers and Ghildyal 1985; Chambers *et al*., 1989) and Participatory Technology Development (PTD) (Haverkort *et al*. 1988) concepts were first introduced in the 1980s. In contrast to earlier agricultural research and transfer-of-technology (TOT) approaches, FPR advocates farmers' involvement as decision-makers at all stages of the process, including the early stages of problem definition, prioritization and the setting of research objectives.

According to Chimdo *et al*., (2005), the words "participation" and "participatory" entered the research vocabulary in the 1980s. Since then, an array of participatory extension methodologies and approaches that aim to involve farmers came to existence. For instance, starting from early 1980s farmer participatory research (FPR), participatory learning and action (PLA), participatory technology development (PTD), participatory rural appraisal (PRA), and rapid rural appraisal (RRA) were used in rural development programs. Recently, other new participatory research and extension methodologies such as Client Oriented Research (COR), Farmers Research Groups (FRG), Farmers Field School (FFS), and Farmers Extension Group (FEG) have been developed and used at a wider scale (Mweri, 2003).

**In Ethiopia**

Agricultural research in Ethiopia dates back to the 1930s when some exploratory studies were conducted by Italian colonial invaders although the major impetus in the history of organized and publicly funded research can be traced to the establishment of three agricultural schools around the mid-20th century (Tsedeke *et al*, 2004). These were the Ambo Agricultural School (1947), the Jimma Agricultural and Technical School (1952) and the Alemaya College of Agriculture (1953). In 1966, the Institute of Agricultural Research (IAR) was established as a semi-autonomous institute under the then Ministry of Agriculture (MoA).

Ethiopia's history in participatory research goes back to Farming Systems Research in the 1980s where participation, although in its rudimental form, was exercised. More recently, there were a number of research projects which emphasized participation. To name some, Farmers' Research Project (1991-1999), Participatory Research in Agro-climate Management (1997-1999), Institutionalization of Farmer Participatory Research (1999-2002) and Indigenous Soil and Water Conservation Project (1997-2001) (Chimdo *et al*., 2005).

Project on Strengthening Technology Development, Verification, Transfer and Adoption through Farmers Research Group (FRG Project) was launched in 2004 and has been under implementation by two Agricultural Research Centers i.e. Melkassa and Adami Tulu Agricultural Research Centers both located in East Shewa Zone, of Oromia Regional State (JICA, 2009). These research centers have been conducting farmer participatory research using FRG approach on subjects ranging from crop to livestock, natural resource to livelihood improvement and farming tools to marketing and between 2004 and 2009, the two centers have established 80 FRGs with more than 1400 members including 800 female farmers.

By their work of an overview of participatory research experiences in Ethiopian agricultural research system, Abera and Fasil (2005), indicated that, similar experiences as FRG approach were implemented in Ethiopia such as the Cool Season Food and Forage Legumes Project and the Joint Vertisol Project (JVP) at Debre-Zeit and Holleta; Participatory Plant Breeding (PPB) by Melkassa, Awassa and Alemaya; Participatory Research for Integrated Agro-ecosystem Management (PRIAM) by Melkassa; the Farmer Field School (FFS) by Holeta, etc.

## IMPORTANCE OF PARTICIPATORY RESEARCH: EMPIRICAL REVIEW

Today participation has become a widely accepted strategy for conducting research and development projects (Anandajayasekeram *et al*., 2008). In his paper that attempts to highlight some of the basic concepts of the participatory research methodology, Chimdo *et al*., (2005) described and concluded that, increased in household food security; increased in income of farmers from high value crops; increased adoption of technologies;

 

technical and financial empowerment of farmers; and an increase of farmers' participation in extension system (in spite of illiteracy levels) were some of the benefits of FFS conducted in Kenya in the early 1990s by different funding organizations on vegetable, fruit crops, maize, livestock production, natural resources management, and marketing aspects.

Ashby and Lilja, (2004), reviewed the efficacy of Participatory plant breeding (PPB) compared to conventional breeding for over 150 projects and they concluded that the efficacy of PPB compared to conventional breeding was demonstrated by increasing the overall level of benefit from the program, increased effectiveness of reaching women and the poor, improved research efficiency, varieties developed being more acceptable and adopted faster, and changed costs without lowering cost–benefit ratios.

***Fasten technology transfer and adoptions***

On their work on describing the highlights of impact of improved bean varieties in western Kenya, Martins and Robert, (2004) indicated that, the new bean varieties transferred through PR had impact on five areas: food security, household income, varietal diversity, firewood use and commercialization. The authors added that, while local varieties are expected to continue being displaced by the introduced ones, many of the surveyed farmers plan to continue planting local root rot-susceptible varieties and, far from eroding varietal diversity, the introduction of root rot-resistant bean varieties appear to have increased varietal diversity, giving farmers the option of growing a combination of new and local varieties to meet their farming constraints and objectives. Moreover, the same authors showed that, farmers change their mode of production from sole maize cropping to maize-bean intercropping, using the most preferred local bean variety (Alulu) and resulted in a marginal rate of return (MRR) of 370% while for the most widely adopted improved bean variety (KK 22), MRR was 697%. These results confirmed that growing maize in association with improved beans is overwhelmingly advantageous, compared with planting maize as a sole crop.

According to Farrington and Martin (1987), strong farmer participation is essential if farmer goals and problems are to be identified properly. A very important purpose of participatory approaches is the empowerment of the farmers and other resource-poor. Farmer participation in technology development increases adoption. Evidence from Philippines indicate that farmers were involved in breeding high yielding variety of rice and as a result of such collaboration between farmers and researchers, farmers developed their own high yielding variety and thus enhanced the farmers' experimental knowledge and skills.

In Kenya Agricultural Research Institute (KARI), researchers used multidisciplinary research teams to develop promising soil management technologies and those promising technologies were validated and disseminated through Farmer Field School (FFS) approach (Mureithi *et al*., 2001). In West Africa (Benin, Cameroon, Ghana and Nigeria), a multi-disciplinary research team diagnosed cassava plant protection technologies and developed low-input cassava plant protection technologies through PR and up-scaled and disseminated to farmers in the sub-region (Chigozie Asiabaka, 2004).

CIAT, (2003) conducted a research entitled "Farmer research group dynamics in eastern Africa" and showed that farmers participation in farmers research groups brought learning with spill-over effects of technologies like seeds and crop management activities and skills are gradually shared with other community members, through farmer-to-farmer exchanges and sale of seed. Yet there can be a tendency to exclude non-group members, in reaction to ridicule from other community members at the initial stages. Farmer research groups provide an approach which has great potential for catalyzing the participation of farmers as partners in research and development activities. However, achieving such potential requires investments in managing and facilitating group dynamics that broaden the scope of participatory research from a functional consultative type to a more collegial and empowering type, and from variety selection to broader natural resources management research.

Different scholars conducted their research on participatory variety selection (PVS) and showed that, PVS facilitates farmers to take active participation in selecting breeding lines and their early participation favors farmers to select varieties according to their preferences, needs and other expected characteristics. Such system has been successfully tested in rice (Joshi and Witcombe, 2002), sorghum and maize (Mulatu and Belete, 2001), and potato and has led to increased adoption rates by farmers. High adoption rates of varieties developed through PPB have been reported by many plant breeders (Monyo *et al.*, 2001; Witcombe *et al*., 2002).

***Enhance income of participant farmers***

Abera (2001) indicated that, by asking respondents to rank all village members into locally defined wealth categories in Central Ethiopia, the farmers involved in FPR approach jumped, on average, two or more wealth categories out of five due to participation in the participatory research approach. The same author added that, both participating and non-participating farmers reported that, as a result of on-farm experimentation with new technologies, FPR participant farmers were able to dramatically increase crop yields and seasonal incomes. With this additional farm income, they have been able to purchase more oxen, increase their landholdings, increase their level of investment in farm production (inputs), and improve household food security and overall household livelihoods.

 

Martins and Robert, (2004) on their study on impact of improved bean varieties in western Kenya, showed that the improved varieties tested and transferred through PR approach had improved food security in both Kakamega and Vihiga districts of Kenya for almost all the surveyed farmers, that is, one third of the farmers in both districts had more beans to eat throughout the year and, consequently, their health and income improved. The survey of local markets showed that the farmers were commercializing the farming of introduced bean varieties, using the extra income for short-term consumption and investments such as food, household items and school related expenses.

The authors also added that, benefits that cannot be emphasized by economic models and gains that cannot usually be traded in the market and thus, cannot be easily captured by an economic surplus model like reduced labor in searching for food, firewood savings, health benefits and advancements in farmer knowledge were also gained by participant farmers. They indicated that the total investment for the PR research was US$325,000 while the projected total benefit of the society from the improved varieties will amount about US$55 million projected over 20 years from dissemination in 1993.

***Enhance knowledge of farmers***

According to FARM-Africa (2001) project report, the farmers' research project has had considerable success in raising the awareness and improving the technical capacity related to farmer participatory research, in the collaborating governmental organizations, i.e. the Bureau of Agriculture, the Awassa Research Centre and the Awassa College of Agriculture. It has brought about a huge, positive change in attitudes to local farmers and their farming systems among research and extension staff, coupled with the spread of practical experience in the use of farmer participatory research methodologies.

On his review work on FRG approach experience of Holeta Agricultural Research Centre, Ethiopia, Kiflu (2005), described that, farmers' participation in problem identification, priority setting, planning and execution of on-farm experiments was improved due to the implementation of PR approach in the research center. He added that, farmers developed a spirit of working together, competitive sprit among farmers to experiment better, exchange of ideas, experiences and knowledge among and between the groups. Moreover, researchers' attitude towards working with farmers, and appreciation of farmers' traditional knowledge, farming system practices and growing environments have been improved.

According to Abera (2001), farmers who participated in FPR approach share a distinct social and economic status vis-à-vis other community members not only because they are beneficiaries than most of their neighbors, but also because as a group they have strong relationships with the FPR researchers, local extension agents, and NGOs active in the community. This situation elevates the social and political status of the project/participant farmers setting them apart from the body of their community.

Chimdo *et al*., (2005) in his paper that attempts to highlight some of the basic concepts of the recently developed participatory methodology, concluded that, as time went by and awareness improved many development workers and researchers came to recognize that PR could play a significant role in rural development in general and participatory technology development process in particular. He added that, applying PR opens a "participatory window" in the research system; improves communication and information exchange thereby improving social relations; can be used as an entry point for social learning; and empowers farmers conditions (both technically and economically).

CIAT, (2003), in assessing the impacts of farmer participation in farmers' research groups in Uganda, Western Kenya and Northern Tanzania showed that participation played role in building social capital so that FRGs are increasingly becoming the vehicle through which farmers pursue wider concerns, initiate new activities, organize collective action, and extend link with external organizations. The study also indicated that, new groups and "second generation" farmers' organizations are emerging as a direct influence of FRGs. Moreover, farmers participation in PR also enhanced human capital and farmers' innovation; farmers collectively acquire new skills and new knowledge, gaining confidence and self-esteem.

***Empowering women farmers***

Benefiting disadvantaged beneficiary groups, such as women, by promoting gender equity in access to resources and agricultural knowledge through participatory research should be social goals of participatory research (Thelma *et al*., 2007).

Studies on PR showed that consulting women and involving them in varietal evaluation leads to the inclusion of varietal traits, especially gender-related varietal preferences, leading to better acceptability and faster adoption of varieties (Lilja and Erenstein, 2002). Failure to include gender-differentiated production and consumption traits and focusing on the wrong attributes leads to biased and inappropriate varietal promotions. Evaluating new varieties only on yield-related characteristics (often gender-neutral) has lead to 19 % of all varieties being miscategorized as superior, whereas incorporating gender-differentiated traits (labor-related, consumption, post-harvest) has reduced miscategorization and increases adoption potential (Dalton and Guei, 2003).

Thelma *et al*., (2007) conducted a case study in Eastern Uttar Pradesh, India for assessing the impact of

 

participatory research in rice breeding on women farmers' decision-making authority (or women's empowerment) on rice varietal choice, seed acquisition and disposal, and crop management; and identify factors that influence women's empowerment. The authors developed Women Empowerment Index (WEI) by categorizing the women and her husband decision making level from 1 to 5 scale (1 when husband alone decides and 5 when wife alone decides) on rice variety choice, seed exchange (sell, reserve or gift), source of seeds, fertilizer application decision, crop rotation, weeding decisions and on-farm seed selection as dependent variable and regressed it against different socioeconomic explanatory variables. The authors found that the women empowerment index or scores were higher among PVS participants than non-participants and were statistically significant, i.e. the women who participated in the PVS trials were more empowered in making decisions on the acquisition of seeds (to exchange, and when and where to get seeds); on what variety to grow in the next season and whether to give/sell the seeds to other farmers; and on when to weed their fields.

Moreover, their findings showed that, all the hypothesized factors which influence women's decision-making authority in varietal choice, acquisition and disposal and crop management, such as size of landholding, production systems, participation in the participatory variety selection trials, age of household head, type of household, access to new seeds and having a male migrant (husband or son) have a statistically significant effect on women's empowerment that participated in PVS. This study suggested that, integrating participatory research and gender analysis enabled women to gain confidence in making decisions related to varietal choice, acquisition and disposal, and crop management. Participation of both men and women in the early evaluation of the performance of the rice lines/genotypes on their own farms led to the development of varieties that are suited to their fragile environments.

A study was conducted by CIAT, (2003) on understanding farmer research groups (FRG) dynamics and processes; and assessing the impacts of farmer participation in research in three benchmark sites (Kabale in Uganda, Emuhaya in Western Kenya and Lushoto in northern Tanzania). Analysis of the trend of participation in FRGs at the different stages of the experimentation process show that, typically, farmer participation in FRG tend instead to follow a *"U"* shaped curve, with high participation at the initial stages of the process, followed by dramatic decrease as many farmers drop out, and slow increase towards the end of the first season. The results of the study showed that there is a significantly higher participation of male farmers at the beginning of the process, compared to women. However, as the process progressed, the relative proportion of women who participate increases significantly while the relative proportion of men decreases. The higher participation of women can be explained by their dominant roles and responsibilities in crop production. The study concluded that FRGs prove to be an effective means of reaching rural women and rural poor, who are often neglected by formal research and extension services.

## PROBLEMS ASSOCIATED WITH PARTICIPATORY RESEARCH

Though participation seems to be uncontested concept which every organization, which claims to be working to improve the livelihood of the poor, would like to, at least, mention as its governing principle, like any other approaches has some issues that need to be looked with caution (Elias, 2005). Burkey (1993), cited in Pijnenburg (2004) identified five basic issues that make planning for participation difficult:

- The problems and obstacles that participants face influence each situation. Initiatives to promote participation cannot necessarily be based on previously defined standards and objectives that may actually prevent initiatives;
- Poor participants may need to see their economic situation improved if they are to participate. This in turn may lead to conflict with the more economically powerful elements in their communities;
- Self-reliance and the need for external assistance must be balanced to avoid newly created dependencies. Promoting participation in initially non-participatory, dependent situations often requires some external help that has to be carefully weighed to avoid new dependencies;
- Organization is a prerequisite for participation; however, care must be exercised to avoid organizations becoming centers of formal power controlled by the few. Those who are directly involved and will benefit from their organizations should also have genuine control over them; and
- Participatory processes seldom begin spontaneously. A leadership whose visions may be external to the perceptions and aspirations of those concerned usually initiates these processes. This inherent contradiction must be resolved and mere mobilization surpassed to create genuine support for an externally defined cause or issue.

Therefore, the PR process as practiced by development agencies to be truly participatory requires vigilance, critical analysis, and a continuous checking of the balance of power, particularly because the organizational structures of development agencies may not be amenable to putting into practice their participatory rhetoric. Although we may wish to be participatory, in practice we maintain centralized control by managing finances implementing research in a top-down hierarchical way, or by maintaining patriarchal decision-making structures. Working with "communities", for example, may exacerbate problems because we often may assume a

 

homogeneity of interests that rarely exists in real life. Communities are composites of different groups and are not necessarily as consensual as we would wish.

## SUMMARY AND CONCLUSIONS

Farmer participatory research emerged as a response to the generation of inappropriate technologies by scientists at research stations whose work was based on the transfer-of-technology (TOT) model. Those working in this field began to develop a series of new research approaches that would result in technologies that would be beneficial to, and therefore adopted by, small farmers. The fact that small farmers did not adopt the technology packages developed at research stations led researchers to conclude that farmers were backward or ignorant, and that the key to success lay in creating a better extension service. Thus, the training and visit system of Agricultural Extension was widely implemented. In the 1970s and early 1980s, non-adoption, still a problem, was attributed to constraints occurring at the farm level. Farming Systems Research arose as a response, emphasizing research at the farm level to diminish constraints to the adoption of new technologies. Finally, in the 1990s, some researchers came to believe that the problem was not the farmers, but the inappropriate technologies they were being encouraged to adopt. This marked the emergence and gradual evolution of farmer participatory research, an approach aimed at creating appropriate technology for small farmers.

As such, there is no proper guideline that clearly indicates what procedures and methodologies to be followed while implementing the approaches. As a result of this, each country uses an array of these participatory methodologies by integrating one with the other or based on the rural development programs of its own. In some countries, these different forms of participatory methods are grouped into one participatory extension platforms. But most participatory approaches share some common features such as: encourage active involvement of other stakeholders in innovation process; integrate formal research with farmer indigenous knowledge and enhance technology transfer and adoption.

Participatory methods address the drawbacks inherent in that approach by actively involving end-users in the research process, incorporating their views and representation into priority setting, reviews, research activities, product dissemination, and how results should be used to benefit the community. Participatory approaches value the input of the beneficiary and are associated with increasing the respect for and incorporation of indigenous knowledge in all aspects of a program or project. There are therefore a large number of benefits derived as a result of beneficiaries' participation. The salient feature of the new approach is the reversal of learning, where researcher and extension workers are learning from farmers.

Therefore, proper implementation of participatory research in research and development programs/projects will bring sustainable development and benefit specific to the needs and conditions of farmers particularly for small scale and resource poor farmers like Ethiopia, who live in complex subsistence and risk prone environments.

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