



Tropentag 2006
University of Bonn, 11–13 October 2006
Conference on International Agricultural Research for Development

Participatory research that builds on local innovation in beekeeping to escape poverty

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Abstract

In Tigray Region, northern Ethiopia, apiculture is a good source of income for smallholder farmers, as both honey and bee colonies are in high demand. To increase the yield and improve the quality of honeybee resources in the region, the Tigray Government introduced modern (Kenya top-bar) beehives and accessories. However, because this equipment is relatively expensive to buy, most smallholders could not increase their income as had been expected. Some innovative beekeepers started to use alternative equipment and practices to manage their bee resources and to improve the quality of the products. They created their own innovations, primarily in beehive modification, honeybee-queen rearing and bee-forage management.

This example from apiculture helps illustrate how identification of local people's innovations serves as an entry point for institutionalising more participatory approaches to research and development (R&D) in agriculture and natural resource management. The different responses of farmers, formal researchers and technical experts to innovations coming from farmers and from formal R&D are analysed. Participatory research and extension activities that are based on and stimulate farmers' innovativeness are described. These are facilitated by a multi-stakeholder platform in Tigray Region that seeks to institutionalise a farmer-led approach to participatory R&D within research, extension and education with the ultimate aims of reducing poverty, increasing food security and encouraging sustainable management of natural resources.

1 Local innovation and Participatory Innovation Development

Local innovation refers to the process by which local people develop new and better ways of doing things, using their own resources and on their own initiative. Innovation by farmers may grow out of local wisdom and inspiration (endogenous) or be stimulated by information coming from outside (exogenous). The results of farmers' innovation processes are inexpensive, easily accessible, locally appropriate and already tested in real farm practice. They are therefore more rapidly accepted by other farmers than are the results of formal R&D. Through informal trials with ideas from multiple sources, farmers make technology fit their own reality and often improve its effectiveness, efficiency, productivity, profitability, durability, marketability, palatability, sustainability etc. Most rural development efforts have focused on transferring "perfected" technology from outside, and have failed to mobilise and enhance this internal input.

In mainstream agricultural R&D in Ethiopia, farmers have been regarded as passive recipients of technologies. The Development Agents (DAs) have been primarily channels for one-way communication from researchers, who knew little about farmers' situations. In recent years, some NGOs and researchers in Ethiopia began to experiment with Farmer Participatory Research (FPR) and Participatory Technology Development (PTD) approaches. Participatory Innovation

Development (PID) is a further step in this direction. It uses local innovations as entry points for farmer-led participatory R&D: joint experimentation by farmers, DAs and scientists to develop the local ideas further, integrating relevant information from whatever source, including formal research. This kind of participatory research starts with confident farmers as genuine partners, because it starts with recognition of their knowledge and creativity.

In PID, first of all DAs and scientists are encouraged to document local innovation and informal experimentation so that they begin to see what farmers are already doing to solve their problems. It is not just documenting indigenous knowledge (IK); rather, it is recognising the dynamics in the farmers' knowledge system and linking it with scientific knowledge. By giving value to local innovation, a PID approach encourages farmers to share their knowledge with each other and with DAs and scientists. It strengthens the relationships between these major actors in agricultural R&D, because it gives them an opportunity to get to know and respect each other. The sharing of knowledge and innovations can provide ideas and inspiration for further innovation through local experimentation and farmer-led participatory research also in other farming areas.

PID is not primarily an approach to research but rather an approach to development. The results of formal research, conducted in a specific place, cannot be applied in all of the diverse agro-ecologies and situations of smallholders in the country. Farmers need to adapt the ideas flexibly to their own situation, and they do this through informal experimentation. PID recognises and strengthens this process. DAs become facilitators of farmer-led experimentation with local and external ideas, and help in recording the outcomes to be able to give ideas to other farmers. They also link farmers with other sources of information, including formal researchers. These, in turn, can bring in their own ideas and can help improve the design of local experiments so that the farmers and DAs can be more confident in the local validity of the results. Using a PID approach, extension services strengthen farmers' capacity to adjust to changing conditions – to develop and adapt their own site-appropriate ways of managing resources for food security, better livelihoods and a sustainable environment. This adaptive capacity is the essence of sustainability.

2 PROFIEET: a multi-stakeholder platform for PID

Since 2003, several organisations in Tigray have been involved in a multi-stakeholder platform to scale up and integrate PID approaches in governmental and non-governmental organisations dealing with research, extension and education in agriculture and natural resource management (NRM). PROFIEET (Promoting Farmer Innovation and Experimentation in Ethiopia) is one of the Country Programmes within an NGO-initiated Global Partnership Programme to build a learning network on promoting local innovation in ecologically-oriented agriculture and NRM (ProInnova). PROFIEET was initiated by several Ethiopian organisations that were engaged in participatory R&D with farmers but, until then, relatively isolated from each other. It is governed by a multi-stakeholder National Steering Committee and coordinated by the NGO AgriService Ethiopia (ASE). PROFIEET focuses on recognising farmers' innovations, linking innovative farmers and communities with each other and with formal research and extension, supporting farmers and rural communities in farmer-led experimentation, and disseminating useful ideas coming out of this process.

In Tigray, several institutions have formed a regional PROFIEET platform known as the Northern Typical Highlands (NTH) team – the Bureau of Agriculture and Rural Development (BoARD), Mekelle University, the Tigray Agricultural Research Institute (TARI) and three local NGOs: the Relief Society of Tigray (REST), the Adigrat Diocesan Catholic Secretariat (ADCS) and the Institute for Sustainable Development (ISD). The NTH team held a series of workshops in Tigray, first of all exploring the concepts of local innovation and PID, and then giving participants an assignment to document local innovations. When the people from the different institutions met for the next workshop, they brought innovative farmers with them. Together, they learned about and assessed the local innovations and chose some to be further explored in a PID process. One PID process is concerned with beekeeping, and is facilitated by BoARD and ISD.

3 Local innovation in beekeeping

One of the innovators that joined the second workshop was a woman by the name of Weizero (Mrs) Gidey, from Ahferom District in central Tigray. Her son had bought a modern beehive for her, but it cost 450 Ethiopian Birr and she did not understand why one had to pay so much for a beehive. She observed it carefully and then experimented with ways of improving it, using local materials such as mud and dung. Her modified beehive regulated the temperature during the cold and warm seasons. It also insulated better against sound. In this enabling environment, the bees started to produce honey more quickly. After one year, Weizero Gidey could harvest more from her modified beehive than from the modern one. She could also produce more bee colonies using her modified hives. Because of the good local market for honey and the

high demand for bee colonies, these sell for a high price. Weizero Gidey now has a total of 15 beehives – seven for producing honey and eight for selling as colonies – and specialises in beekeeping as her major source of income.

By combining components of IK and “modern” knowledge about beekeeping, Weizero Gidey and other innovative farmers have managed to develop better methods of producing more and higher-quality honey, rearing honeybee queens and producing new bee colonies. They could thus increase their incomes and pull themselves out of poverty. At the same time, beekeeping encourages sustainable management of the natural resources that provide bee fodder. Some of the farmers are innovating with bee-fodder management. For example, they started to enclose areas to protect *Ghirbya*, *Tebe* and *Siwaqarni* (Tigrigna names) near stones bunds and on common land, as they know that high-quality honey can be produced from these local bee-fodder plants.

4 Responses to innovations from different sources

In March 2006, Weizero Gidey and several other innovative farmers – as well as “model” farmers who were adopting modern technologies from extension without changing them – were invited to an "Agricultural Technologies and Marketing Strategy Exhibition" in Mekelle, the capital of Tigray Region. At this five-day exhibition, technologies developed by farmers were displayed side-by-side with “modern” technologies developed by research institutes and private enterprises. Also technical experts, research scientists and government officials attended from all parts of Tigray Region, as did other farmers and consumers – a total of about 2500 people.

During the preparations for the exhibition, people in both government agencies and NGOs were stimulated to identify and understand the innovations of local farmers in their own terms. During the exhibition, still more people appreciated the farmers' innovations. It was an eye-opener for the experts, researchers and officials that farmers actually develop their own technologies. However, most of the formally educated “experts” were still most interested in the modern technologies, including machines, that were said to be higher-yielding or faster – or simply appeared to be more attractive.

Also the farmers attending the exhibition appreciated technologies that promise higher production but they wondered also about other qualities of the technologies and the knowledge behind them. Knowing the source of knowledge, they could better judge whether they would be able to apply the new ideas easily in their own setting. They were more interested in seeing improved technologies from similar sources, i.e. from other farmers, than from formal researchers and modern workshops. They had more confidence in the technology or knowledge coming from other farmers. During the first day of the exhibition, the farmers visited all technologies from whatever source but, from the second day onwards, they focused on the technologies developed by farmers, and asked them countless questions. These questions revealed the farmers’ criteria in assessing technologies: easy to obtain or to make oneself from local materials, inexpensive, easy to understand, easy to handle, flexible for different conditions, and easy to modify and to repair.

The comments made by individual farmers revealed they had been deliberately seeking pieces of information about different technologies, bringing the information together in informal group discussions with other farmers and coming to a group assessment. For example, ISD staff had taken Weizero Gidey to visit another new beehive being displayed by a modern workshop. The beehive was made of plastic foam and described as lightweight and well insulated; it could be assembled in a few minutes. She raised her concerns that the materials for the beehive had to be imported, and that it would break easily but would be difficult to repair. In other words, it would make farmers dependent on external resources. Later during the exhibition, she stated: “I have been discussing this with other farmers and we found that it is not good for us”. She underlined that her innovation is much better to address her fellow farmers’ needs.

However, the farmers did not ignore the modern technologies and could recognise their advantages. They appreciated the opportunity offered by the exhibition to see a wide range of options – both local and “modern” – from which they could extract and compile ideas to improve their production systems and their incomes.

5 Local innovation as common property

The exhibition gave about 200 innovative and model farmers – one third of them women – an opportunity to interact and share knowledge directly: they could pick up ideas from other farmers without the mediation of DAs or technical experts. It was obvious that the farmers respected each other and willingly shared information about their innovations. Indeed, they were proud to be able to show their innovations to other farmers, technical experts, scientists and officials.

In Ethiopian culture in general and in rural Tigray in particular, almost all individual and/or community knowledge is free for others to use. Not only the knowledge but also the person – the knowledge holder – is regarded as a resource for the community. In this culture, to “fence in” knowledge or innovation is a sign of selfishness. After visiting an innovative farmer, community members and also outsiders are free to share or adopt the ideas, with or without modification. As one farmer innovator in Tigray said: “Unless we share with others, see the capabilities of their technologies, compare and adapt the good technologies, how can we live and improve our own technologies?”

There is no restriction in copying what other farmers have developed. An innovation that addresses a widespread concern in a community quickly spreads to other farmers, who regard the initiator farmer as a kind of community library or community engineer whom other community members may ask for advice. In Weizero Gidey’s words: “Copying should be there. I took some ideas from the modern hive – this means I am copying – and I added mine. People also come and see what I am doing. I know they will copy, as I did, if they find it good. Thus, we live by sharing.” She said she would never refuse to host a visit or to give information to others.

In order to ensure that the knowledge remains in the public domain yet with due recognition to the innovative farmer or community, PROFIEET is documenting and disseminating the local innovations, based on community members’ knowledge of who did what.

6 PID process in beekeeping

As another step after identifying local innovators, the PROFIEET team in Tigray brought them together to explain their innovations to each other and to formal researchers and technical experts at an “Innovative Farmers Workshop” held in Axum in central Tigray in April 2005. The workshop participants selected beehive modification and queen-rearing innovations by Weizero Gidey and Ato (Mr) Gebrehiwet to be explored further in PID, because many farmers were interested in these possibilities to increase their income through beekeeping. The participatory experimentation is meant to answer questions that both farmers and others (DAs, researchers) have about the local innovations and how these might be developed further and/or adapted to different conditions.

In this process, each of the two above-mentioned innovative farmers serves as a nucleus in her/his locality, working together with 3–4 farmers with similar interests. They are looking into: 1) the optimal ratio of mud, dung and other materials for constructing the beehive with a view to its strength, durability, regulation of temperature and insulation against noise; 2) estimation of colony size and assessment of quality and quantity of honey production; and 3) understanding the seasonal aspects in the life cycle of the queen so as to improve the queen-rearing business. Each group meets every second weekend to assess the different outputs of their experiments and to plan what should be done next. Sometimes, other local farmers join to observe and comment on the experiment. Both the local DAs and the district-level subject matter specialists are involved in documenting the experiments.

7 Institutionalising the PID approach

By taking part in these PID processes – by facilitating the joint experimentation directly, or by observing and documenting the process and outcomes, and/or by helping disseminate the outcomes – the various individuals in the PROFIEET team in Tigray are learning about local innovation and PID. It is a role of each team member to make these activities known within his or her organisation. Due recognition is also given to the knowledge contribution made by each team member. These are deliberate steps towards institutionalising the approach within each organisation and strengthening the networking between the organisations, which are the main aims of PROFIEET as a platform.

Through PROFIEET, different NGOs and government organisations of agricultural research, extension and education are learning to work directly with innovative farmers and to encourage all farmers to be innovative in their own way. PROFIEET brings together individuals from the different organisations who want to join farmers to experiment with new ideas, whether endogenous and exogenous. It provides a platform for the members to learn together, to strategise on how to go about integrating the approach into the mainstream work of their organisations and to support each other in doing this. The platform seeks to strengthen the capacity of DAs, experts and scientists to recognise the problems being addressed and the potential solutions being developed by local innovators in their informal experimentation and to participate in farmer-led R&D. In this collaboration, a role of extension will still be to make information easily available to farmers, but this includes information from all sources – including other farmers – with the aim of enriching an ongoing process of farmers' experimentation and adaptation to new conditions.