

# Local and “modern” innovations: what interests whom?

Hailu Araya and Yohannes GebreMichael

Ethiopia is one of the nine countries involved in the international network PROLINNOVA (Promoting Local Innovation). The Ethiopian programme, called PROFIEET (“Promoting Farmer Innovation and Experimentation in Ethiopia”), decided to set up teams of governmental and NGO people in different agro-climatic zones. In Tigray, the Northern Typical Highlands (NTH) team was formed between the Mekelle University, the Tigray Bureau of Agriculture and Rural Development (BoARD), the Institute for Sustainable Development (ISD), the Relief Society of Tigray (REST), the Adigrat Diocese Catholic Secretariat (ADCS) and the Tigray Agricultural Research Institute (TARI). This Northern Typical Highlands team brings innovative farmers together around common interests so that they can solve their local problems faster than when working on their own. It also brings them together with formal research and development agents who want to support local innovation processes.

The team takes farmers’ innovations as starting points for Participatory Technology Development processes and extension. An exhibition of local and “modern” agricultural innovations revealed that smallholders and formally educated people from research centres and technology workshops have quite different interests. In this article we describe some of the local innovations exhibited and how farmers and other people involved in research and development differently perceive the local and “modern” technologies.

## Farming technology exhibition

As part of its regular activities, the Tigray Bureau of Agriculture and Rural Development, together with the “Improving Productivity by Marketing Success” project of the International Livestock Research Institute (ILRI), organised the Agricultural Technologies and Marketing Strategy Exhibition. This was held in the second week of March 2006 in Mekelle, the capital of the Tigray region. Many government agencies, NGOs, private firms and Ethiopian and international research organisations took part. Some organisations brought farmers with whom they are working: either “model farmers” showing introduced technologies, or innovative farmers showing their own technologies. Of the roughly 2500 participants, more than 200 were innovative and model farmers.

As far as we know, this was the first time in Ethiopia that smallholders’ technologies were displayed side-by-side with “modern” technologies developed by research and private enterprises. The exhibition also included a five-day workshop, where many papers were presented and discussed.



Photo: Hailu Araya

The Mekelle exhibition.

In one part of the exhibition, experts from the Bureau of Agriculture and Rural Development and farmers from the various districts of Tigray presented different agricultural products, such as pulses, oilseeds, spices, vegetables, fruits and honey. Some processed items, including dairy products, were also exhibited and sold. Many people were buying and

## Box 1: Improved beehives and queen rearing

There is a long tradition of beekeeping in Tigray. Traditional hives are made of wood, dung and mud. A few years ago, the government extension programme and REST, a local NGO, introduced wooden top-bar beehives. In the village of Maysuru, in the Ahferom district, REST field staff met a female farmer who has been actively experimenting and innovating in beekeeping. Giday Aregay is in her late 40s and has eight children. Because her husband has been ill for many years, she is responsible for supporting the household through farming and beekeeping.

Giday’s oldest son, a schoolteacher, bought her a modern hive for 450 Birr (approximately US\$ 50). She earned 200 Birr with the first honey harvest and became convinced that beekeeping could bring a good income. At the same time, she wondered why the hives had to be so expensive, so decided to try making one out of local materials. She measured the “modern”

beehive with a stick and then made a replica out of cow dung and mud. She made the frames out of wood, ensuring they were all the same size, so that they could fit into any beehive she made. She used thread from used tyres (sold on the market) to hold the honey comb, replacing the wire used in the “modern” frames. She experimented with frame spacing and discovered she could harvest more honey using fewer frames than in the modern hive. She harvested 40 kg honey from her adapted beehive, 5 kg more than from the modern one. She attributes her better honey harvest and higher production of bee colonies to the insulating effect of the mud and dung during the cold and warm season. She also built hives for queen-bee rearing. Today Giday has 15 beehives: seven to produce honey and eight to produce bee colonies, for which there is a high demand on the local market (each colony sells for 450–500 Birr). Honey and bee colonies are now her main source of income.

sometimes eating the products on the spot. There was also an exhibition of appropriate technologies related to beekeeping, water pumping, irrigation, ploughing, biogas production and much more. These were demonstrated by farmer innovators, extension workers, private firms and NGOs. Information was provided through photos, videos, brochures and pamphlets.

Many of the visitors to the exhibition were attracted by the exhibits of *beles* processing (*Opuntia sp.*), solar technology and silk worms. Farmers, in particular, were interested in what other male and female farmers presented: technologies they had developed themselves. These included, for example, water-lifting devices, subsurface drainage systems, drip irrigation techniques, improved beehive and queen rearing techniques (see Box 1), a single ox plough, or a wild bee domesticating process for obtaining medicinal honey (see Box 2).

### Differences in interests and perceptions

It was very interesting to observe how systematically the farmers took in the new information that the exhibition provided. Interviews with many participants and observations during the exhibition revealed that, during a first round on the first day, the farmers looked at all innovations, whatever their origin. At first they were interested only in the technologies, and not in developers of each technology. During second and third rounds on the first day, they sought information about the person or institutions behind each technology, and also gathered other farmers' views. First they met with farmers they already knew, and then started talking with other farmers. They discussed the technologies exhibited: which ones looked easy to apply, asking if anyone had tried the technology and what their experiences were.

On the second day, the farmers selected and focused on the new technologies – whether “modern” or local innovations – that interested them particularly. After the second day, they spent their time trying to find out more about the skills and inputs needed for the technologies they had selected. They visited the exhibits according to their importance: giving most time to the technology which they found most important. After they had gathered all the information they wanted, they felt it was a waste of time to stay longer at the exhibition and workshop. They stressed that the exhibition was very useful for exchanging experiences and learning about new technologies.

But having locally-developed and “modern” exhibits side by side also helped us to see that the interest shown by farmers was not the same as that of other participants. Researchers, agronomists or other professionals were reluctant to visit what smallholders had developed and were interested in. They appeared to be drawn by the newness and attractiveness of “modern” technologies, and looked mainly at their productivity in quantitative terms. The few farmers with some formal education visited both types of technology almost equally.

The majority of farmers present, on the other hand, were drawn to those innovations most useful for small-scale farming. They were interested in the technologies they regarded as effective, easy to apply and inexpensive. They appreciated technologies that lead to higher production, but also asked about the market for the products, especially for more perishable ones like tomatoes. Besides productivity, they wondered about other qualities of the technologies and the knowledge behind them. They asked the local innovators numerous questions: how did you learn this? How long did it take to make it? Are the materials you used easy to find? Does your family understand and like this? What main problems did you observe? What is the

### Box 2: Domesticating wild bees for medicinal honey

Birhane GebreMariam is 35 years old. He and his wife have five children, some attend school and some herd goats, which Birhane also does. It was while herding five years ago that he, by chance, discovered a nest of *tsedina* – wild bees that live underground. This bees' honey is used as medicine, e.g. for asthma, fever and heart ailments. The entrance to the *tsedina*'s underground nest is very narrow and not easily seen. Many people seek *tsedina*, and by digging the nest up and extracting the honey, also destroy it unintentionally. This practice has made them rare in some areas.

When Birhane was young, his mother died of a heart ailment. The medicinal honey needed to treat her could not be found on the local market. Remembering this, when he discovered the *tsedina* nest, he decided to move it to his farm. One evening, he and two friends dug out a cubic metre of earth which held the nest intact and moved it to the ground near his house. A year later, he started harvesting by lifting a layer of soil and putting it back again so that the hive was not destroyed. The initial harvest was 2.5 litres of honey, which he sold for 150 Birr (approx. US\$ 17). Over the years, he moved three more *tsedina* nests, complete with the surrounding soil, to his homestead.

Birhane now extracts honey regularly, and because of his initiative, the traditional medicine is now available locally whenever needed. He has experimented with moving the hives in different seasons and harvesting at different times. He has learnt that the nests should not be moved during drought or in December/January, and that honey should be harvested only once yearly. But he would still like to learn more about the bees' behaviour, and queen rearing. He would like to join other researchers and investigate the best location of the nests, and also look at competition and harmony between *tsedina* and normal bees.

cost? When the farmers saw the “modern” implements produced by industrial workshops, they appreciated them but did not ask as many questions as the agricultural professionals did.

There is obviously a gap between the experts and the smallholder farmers in Tigray. This creates a big challenge for groups such as the Northern Typical Highlands team, which try to bring all these actors in agricultural innovation together. The actors in an effective innovation system need to believe in and like each other. Otherwise, they cannot combine forces to make the most of the agricultural potential in Tigray.

Observing how farmers learn from the new technologies exhibited by their peers and by modern workshops and research centres made us realise that most “educated” people in agricultural research and development understand little about what interests smallholders. They do not know what sort of things farmers want to spend their time seeing. We need to observe more closely what farmers are doing in developing their own innovations, and what type of information they seek from others to continue their own process of agricultural development. The exhibition provided a good opportunity to learn how information exchange to support this process can be improved. ■

**Hailu Araya.** Team Leader, Institute for Sustainable Development (IDS), Bole Area, Addis Ababa 1110, Ethiopia. E-mail: hailuara@yahoo.com  
**Yohannes GebreMichael.** Addis Ababa University (AAU), P.O.Box 1176, Addis Ababa, Ethiopia.

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