

## **Towards an integrated knowledge systems for Smallholder Coffee Farmers**

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### **Introduction**

Smallholder coffee farmers' livelihoods are under threat as never before, for a number of reasons of which delegates to this conference are well aware.

If they are to survive and prosper in a free market against efficient and increasingly mechanised agri-businesses, it is generally acknowledged that they can do so only on the basis of quality and/or some other desirable and marketable aspect of their enterprise (e.g. organic production, biodiversity, agro-tourism etc.).

If we agree with these initial premises, then it follows that smallholders will require help to radically reorganise and retool to provide themselves with the knowledge to sustain profitable ventures. It also implies that we will need to understand them better: their doubts and aspirations, their needs and limitations.

In essence, we are discussing the change from a peasant lifestyle to a modern entrepreneurial, knowledge-intensive way of working. For us as scientists working in development, this is what the term "globalisation" implies.

This is no easy undertaking, but we believe it is both possible and inevitable if smallholder farming is to survive. And coffee, with high added value and a life-style image to promote, is the most favoured industry to lead this development.

### **The past**

The classical way of knowledge transfer is from research stations, through published studies, to extensionists and thence to farmers. This "top-down" approach is increasingly out of favour. It can work in some circumstances, e.g. the introduction of a new pest-resistant variety, but with technology that requires new specialised knowledge, it is more difficult. Most problems are not just technical but have a social dimension as well. For instance, a new technology may require changes in labour or capital inputs but these requirements might not suit the existing priorities and practices of small farmers. We argue that the close co-operation of farmers is essential from the beginning to fully understand the problem and to try out potential solutions at an early stage.

And in many countries it is now too expensive to adequately cover farmers' needs by traditional methods. It is now common to find one extensionist serving more than a thousand farmers and this by itself can never be an adequate way of satisfying their requirements.

Accordingly CABI, in collaboration with ICO, CFC and others, have been developing techniques and concepts over a number of years through direct interaction with smallholder farmers. We now briefly cover some of these initiatives.

### **Farmer participation in Colombia**

In Colombia as part of our CFC/ICO coffee berry borer project, local staff has developed a system for working with groups of farmers. After three years of work, they have evolved an original model for farmer-scientist collaboration. The project

works mostly with smallholders in three departments of Colombia. 72% of them have less than 5 ha of land. The method is outlined in Box 1.

#### **Box 1. Cenicafé's farmer participation process in Colombia**

1. *First encounters*: for the first 4 months they visited the areas with local extension agents, getting to know the areas, and gaining farmers' trust.
2. *Individual visits with farmers*, to learn what they know and the gaps in their knowledge. They conducted individual diagnoses of 113 farmers, to learn the farmers' concerns and knowledge. The method: the researchers had a written format to fill in, but did not administer it like a questionnaire. They visited the farm household, walked with them over their land, chatted informally, and filled in the form later. They led Participatory Rural Appraisal diagnostic sessions in each of 9 communities, to identify problems, solutions and to brainstorm CBB control ideas to research. These formal, quantitative methods allowed them to assess farmer knowledge (Box 3f).
3. *Training farmers*, involving extension agents to filling in the gaps in farmers' knowledge thus creating a level playing field for collaboration. Evaluation of training is also carried out.
4. *Establishing and carrying out tests on things that are likely to work*. From the above steps, things are agreed upon for further action. Some are farmer inventions, but most are scientist inventions. Farmers modify some of the techniques during the tests (Box 3f).
5. *Farmers present results of the research in a farmer-scientist workshop*. Two well-attended and comprehensive events have been held.
6. Evaluate the cost-effectiveness of the process. A full economic analysis with an agricultural economist, this has been done now for CBB cultural control.
7. *(Future step) train extension agents*, using practical demonstrations (hammer and nails, not talk and chalk) of the most promising technologies.

#### **Coffee lessons in Ecuador**

In two communities in the Cotopaxi province of Ecuador, Anecafé project staff has been working with extensionists and village teachers to develop a simple curriculum of lessons to teach children how to grow coffee. Parents meet at the school to discuss the project with their sons and daughters. It turns out that children very soon learn the elements of setting up and running a nursery. They work in small teams to mix soil and organic matter, fill bags, plant seedlings etc. They even have a quality control team to inspect and sometimes reject the output. Children enjoy these classes because they are practical and it gives them a chance to get out of the classroom. But they still learn many things, about biology, agronomy and crucially, co-operation.

We feel that there is a lot of scope to develop this initiative. The teachers are young and keen and have rapport with the children. If they could receive specialist training and equipment, they could soon learn computer skills to master farm accounting, Internet use and thence it could open up many possibilities for both children and adults in distance learning, commercialising their farm livelihoods and communication with other communities.

### **A farmers' web-site in Colombia**

Small and poor farmers in a remote part of Caldas, Colombia, were recently approached by project staff to discuss the idea of developing their own web-site. Surprisingly these farmers, although they had never experienced the Internet, knew all about it and were keen to collaborate. In the words of the young Colombian who is translating their thoughts to digital form: "They want that others see them as they are, people of scarce resources, but organised and full of ambition and desire; although their knowledge of the Internet is not profound, they have an understanding of the impact that a web-site can have. Their interest is to be able to export their product as specialty coffee and through the site they want to show how they efficiently produce their commodity."

By the end of the present project we expect to have a prototype web site finished with profiles of at least two farm communities, together with photos and comments from farmers about their lives and livelihoods. We don't know what will result from this initiative, but we feel it needs to be tried and the results of the experiment recorded and analysed.

### **A telecentre in Uganda**

From a small project in Uganda we know that farmers are not frightened to use new technology. CABI, with IDRC (Canada) funding, is working with the National Agricultural Research Institute (NARO) in Uganda, local NGOs international NGOs (ActionAid) and CBOs (Community Based Organisations) to develop new ways of providing farmers with the knowledge and information they require.

Three telecentres have been set up in the Luwero and Mpigi districts of Uganda. These provide telephone, fax, email and Internet services to farmers in towns near market places. At first they tended to use the services for personal, non-farm purposes, but they now access a wide range of information; they ask questions to an information officer and they access coffee price information. From their comments (Box 2) it is clear that there is keen interest.

#### **Box 2. What Ugandan farmers say about a telecentre**

The National Agricultural Research Organisation, IDRC and CABI telecentre project started in 2000 with three workshops to sensitise the community members and inculcate ownership of the project. The workshops also aimed to prepare the community members and other stakeholders for following activities. About 120 participants attended the workshops and a cross section of farmers had this to say:

**Mariam Namiiro:** "I am pleased that the project will assist us find specialists to train us on how to graft coffee and mangoes for ourselves"

**Hebert Mpindi:** "We farmers are currently forced to sell our produce at very low prices, which lowers our morale. We require information on markets, market prices, storage, transportation, post harvest and processing"

**Female farmer:** "We welcome the project with relief. We no longer need to travel to Kawanda in search for agricultural information"

**Aloysius:** "Coffee is a major income earner but the coffee wilt disease has almost wiped out our plantations. What are NARO and others doing about the disease and what is the alternative to coffee?"

**James Muwonge:** "We acknowledge the good work NARO is doing in promoting increased food production but we farmers are concerned about finding suitable markets and good prices for our produce"

**A farmer:** "We request that the new project facilitates sessions where subject matter specialists will be brought to the community, to discuss various agricultural issues such as cassava, coffee wilt, weather, marketing problems etc. with us".

### **Farmer field schools**

Another way of assisting farmers is the Farmer Field School method (FFS). This is a group-learning approach to build capacity among farmers in Integrated Crop Management (ICM). It was first developed in SE Asia for rice in the 1980s and the concept has been extended to many other crops. CABI, the Kenya Agricultural Research Institute, the Coffee Research Foundation, the Kenyan Ministry of Agriculture and the Kenyan Institute of Organic Farming, set up a coffee and vegetables FFS. Concerns over environmental, health and economic effects of expanding insecticide use in the Kenyan highlands motivated FAO to fund the project. It was executed through experiment-based learning, in groups of 15-20, that met in farmers' fields. ICM principles promoted included: biological control, the relationship between crop nutrition and pest tolerance, inculcating careful observation before taking decisions. The group discussed management options before testing them in a communal project field. Stress was placed on the importance of farmers trying them out things for themselves. A post-project evaluation found evidence for an increase in innovation, improved vigour of coffee trees, reduced use of pesticides, and interest by farmers to extend the concept to marketing. Regrettably the project is now concluded; this is a common problem, projects often end just as encouraging results begin to flow.

### **Farmer participation in India**

A variant of the FFS can be seen in India. As part of the CFC/ICO coffee berry borer project, demonstration plots have been set up on farms to try out new and standard practices to control this pest. By adapting and building on local pest control knowledge and cultural practices the status of CBB in most areas has been reduced to that of a minor pest. Infestation rates are now below 5% in these areas.

Cultural control measures such as the use of picking mats, the removal of off-season berries and improved thoroughness of harvesting, have the advantage of being cheaper and safer than chemicals. In most cases, farmers have been able to reduce and, in some cases, stop their use of chemical pesticides. By putting these new management practices in place, smallholders find that they can now get the full purchase price available.

As R. Muraleedharan, an experienced coffee farmer from Tamil Nadu with 5 acres of coffee, stated, "I am confident that I can now manage CBB in the future". Another farmer, A.R.K. Sundraam, who owns 35 acres, was asked if he still received a reduced price due to CBB infestation. He replied, "I can now sell borer-free coffee at full market value as it is borer free". Farmers have been so impressed by demonstration plots set up by the project that they are keen to host their own.

A particular emphasis has been on facilitating the involvement of women in the learning process. Though playing a significant role in coffee production, women have often been underrepresented.

## **Conclusions**

Participatory research, farmers' field schools, distance learning, telecentres, web-based knowledge, these and similar schemes are the approaches that we believe need to be tested, improved and then the most useful to become widely available to coffee farmers. Soft- and hardware have developed to the point where for the first time in history it is now possible to start linking all members of the coffee chain together at low cost, with information flowing freely in all directions. This is our aim for the coffee industry: to become a champion of diversity and transparency, to create a level playing field and a sense of global community for all those to whom coffee is a way of life.

All the approaches outlined here are designed to empower farmers to choose their own future. Prospects for them, their families and their communities are not encouraging at present, but we firmly insist that with imagination and enterprise, the future for many of them can be sustainable.

The farmers we have encountered during these projects are in most cases resourceful, enthusiastic and most of all, eager for new knowledge. Provided we can source sufficient funds, we are confident that we can build on some of the initiatives outlined here and help farmers adjust to new realities. Smallholder farmers have always been the soul and greatest asset of the coffee industry, and they must be part of its future.