

Going Public: A New Extension Method

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Contemporary agricultural extension uses intensive face-to-face communication, especially for teaching farmers about pest and disease management. Development scholars are increasingly concerned about the cost of these programmes, and some are trying to reach more farmers through mass media. Small media is another recent option. We have developed a novel method of face-to-face extension, which we call Going Public. It makes use of places where farmers meet spontaneously, such as markets, bus terminals and other public places, to create a two-way learning channel. Going Public allows scientists, extensionists and farmer experts to show things to people, answer questions, run short experiential learning exercises and potentially to distribute material, as in any other face-to-face method, but it is quick and it allows contact with people from many areas at once. It also allows scientists to gather feedback from farmers in a social setting where the farmers are comfortable, surrounded by their friends and neighbours, but where they are also free to come and go.

Keywords: agricultural extension, farmer field schools, pest and disease management, mass media, Bolivia, Bangladesh

Plant Health Extension

Going Public is a new idea, designed to complement existing extension methods. It has been tried both in Bolivia and Bangladesh, with encouraging results. The authors will present the Bolivia case in more detail, and then give a brief account of Bangladesh experience that corroborates the Bolivian experience. Resource-poor farmers in developing countries often rely on outsiders, whether media, pesticide dealers, extensionists, or scientists to learn about plant health.

Agrochemical companies often use mass media to advertise their products countrywide, and aim for partnerships with the national

extension service to improve the reach and impact of their messages, regardless of the plant health problems farmers face (Van Mele *et al.*, 2002). Likewise, farmers often consult pesticide dealers, even though they are a biased source of advice. A study of private extension by a chemical company in Pakistan showed that their advice was slanted towards selling pesticides (not too surprising). Company agents found it in their own best interest to maintain good relations with farmers, but their favourite clients were less-educated people with large landholdings, just the sort of customers who are able to buy a lot of agrochemicals, while well-educated consumers with smallholdings were the least satisfied with the chemical company extension service (Davidson *et al.*, 2001).

To counter the biased advice of pesticide dealers, increase production, save costs and improve food quality, among other aims, development professionals developed new ways to improve farmers' decision-making, helping them to teach themselves about pest, crop and soil management.

Social extension methods like farmer field schools (FFS) and adaptive research methods like local agricultural research committees (CIALs) are both based on learning through regular direct contact between extensionists and farmers. Both methods started in the 1980s, with FFS being developed in Asia and CIALs in South America. In recent years the methods have 'met' in the field and have started to blend (Braun *et al.*, 2000b). In CIALs, extensionists meet with farmers periodically during the growing season to conduct formal field trials, and to report the results back to the community (Ashby *et al.*, 2000). In FFS, extensionists and farmers meet weekly, in the fields, to learn about crop and pest bioecology and management. Agroecosystem analysis and other adult learning exercises like insect zoos (setting a small area of the

field aside and not spraying it with insecticides, where farmers can observe beneficial insects) are important tools to learn about pest, disease, crop and soil management (Thiele *et al.*, 2001; Vos, 1998; Winarto, in press). Although the FFS is explicitly an extension method, it can also generate new technology. FFS farmers are often stimulated to innovate and try out alternate techniques after being provided with new agroecological knowledge (Braun *et al.*, 2000a; Röling & van der Fliert, 1994; van de Fliert & Braun, 2002; van de Fliert & Winarto, 1993).

Farmers often respond creatively to new agroecological knowledge, by inventing new techniques (Bentley, 2000; Meir, 1999, 2000). See Ooi (1998) and Winarto (1995, 1996) for some good examples of techniques invented by farmers in response to new information learned at field school, especially notions of natural enemies to control insect pests (Ooi, 1996).

One of the most creative and promising changes in recent field schools has been for scientists to include formal research as part of the curriculum. Several FFS communities did original research on rice blast in Vietnam and potato late blight, in collaboration with scientists and extensionists. Vietnamese farmers experimented with nitrogen levels and planting density, and Peruvian farmers tested resistant varieties as part of their FFS (Nelson *et al.*, 2001). Actually, this might be taken as an example of the blending of FFS and CIALs, mentioned above, since field trials are part of the stock in trade of CIALs.

In spite of the achievements of recent face-to-face extension programmes, the challenge for the future is still huge, as most farmers have not yet been reached. For example, after eight years of labour by the FAO Rice IPM Project, two million rice farmers had attended a Farmer Field School. Even so, that means that 99% of the 200 million rice farmers in Asia have still not attended (Heong *et al.*, 1998; see also Way & van Emden, 2000).

But FFS is more than work. Designing a FFS curriculum requires talent and expertise. Way and van Emden (2000) write that the success of the first FFS in Indonesia was based on years of previous entomological research, implying that future programmes will also have to do background research before starting FFS. Continued success of field schools in other crops (besides rice in Asia) will depend on future research of the dry season survival of natural enemies in the semi-arid tropics, among other topics

(Mathews, 1999). In other words, few have questioned the quality of recent face-to-face extension; the main criticism has been of quantity: we need to reach many more farmers. This has led to a debate about cost.

Less Money for Extension

Face-to-face extension methods are caught up in the crisis of shrinking public funding for agricultural extension in general (Christoplos & Kidd, 2000; Farrington, 1994; Quizon *et al.*, 2000; Rivera & Zijp, 2002). However, European donors are still being encouraged to fund FFS programmes for less developed countries (Iles *et al.*, 2001). Willem Zijp, principal agricultural services specialist at the World Bank, dismisses economists who say face-to-face extension is not sustainable. But he does admit that about 90% of farmers never see an extension agent, and that it is expensive. He would like to see more radio, especially interactive radio, where farmers get on the air, and also calls for more creative ways of reaching farmers (Zijp, 1999).

Extension experts need to be wise like the fox who knows many things, and not wise like the hedgehog who knows one, big thing. We need several methods for experiential learning, and new settings where farmer experts can share information with others in social learning experiences (see Pretty & Buck, 2002). First steps in this direction have already been made by the founders of FFS, as they are increasingly looking into promoting networks among NGOs to multiply outreach, and into incorporating IPM experiential learning tools into basic education programmes (Sommer *et al.*, 2001). On the other hand, radio and written messages have long been a part of extension, and some people see mass media as a way of reaching many more farmers than with face-to-face methods.

Mass Media

Mass media, especially radio, can be a cost-effective way of reaching a large population of farmers (Garforth & Lawrence, 1997). Formal evaluations suggest that if the programme is of good quality, farmers learn the key messages (Price, 2001). An IIRI programme in Vietnam was recently awarded the 2002 St Andrews Prize for the Environment for its mass media

programme, stimulating rice farmers not to spray insecticides against leaf folders for the first 40 days of the growing cycle (Conoco, 2002). Between 1992 and 1997, this media campaign reached 92% of the farmers in the Mekong Delta and resulted in farmers making large reductions in the number of pesticide applications (Huan *et al.*, 1999). Mass media was also successfully used in an integrated approach to help people identify and control the pink hibiscus mealybug in Trinidad and Tobago (Seepersad *et al.*, 2002).

However, farmers in China who heard loud-speaker warnings about insect pests misinterpreted the announcements as instructions to spray insecticides (Mangan & Mangan, 1998). Clearly, some topics are more amenable to broadcasting. Radio is not the best format for visual topics like changing the washers in a backpack sprayer, or for showing the difference between beneficial and pest insects (for example, between lady bird beetles and leaf beetles). Still, there are many creative ways to use radio to complement face-to-face communication; fishery biologists in Peru announced their visits over the radio to fishing villages along the shores of Lake Titicaca. Relations with outsiders and the government were often tense, and the biologists were convinced that the radio announcements were one reason they got a better reception than other city people who showed up unannounced. The villagers perceived local roads as village property, and resented intrusions on them. The radio spots in Quechua and Aymara were a respectful way of acknowledging local authority (Orlove, 1998).

There are some successful TV extension programmes like *Profesor Yarumo*,¹ now in its second generation in Colombia, produced by the Colombian Coffee Growers' Federation. A four-person team produces a half-hour programme weekly, based mostly on interviews with innovative farm families in the central coffee belt. Aside from some enlightened TV programmes like *Profesor Yarumo*, TV has mainly been used by companies to push agrochemicals (Van Mele *et al.*, 2002). There is much more potential to use TV to stimulate farmer innovations in crop and pest management.

Written media include comic strips and pamphlets, especially to support messages given by extension agents (Heong & Escalada, 1997). However, research in Honduras showed that

farmers learned far less from written material alone than from extension agents, although they do learn something. Also, comic strips can be amateurish and offensive, and a better format is plain, serious prose with clean, black and white line drawings (Figure 1) (Bentley & Andrews, 1991).

In other words, face-to-face extension can be of high quality, but costly (Bentley & Andrews, 1996; Feder *et al.*, 1998; Norton *et al.*, 1999; Thiele *et al.*, 2001), and unable to reach all the people who need it. Mass media is cheaper, but there may be some problems with its quality. Besides, it is not suitable for all topics and not as participatory: watching a television programme on compost may not be as useful as actually making compost with the help of an extension agent.

This places development programmes in a quantity–quality dilemma of how to keep costs down while reaching more people i.e. 'to up-scale', in current jargon. Small media, which include any inexpensive devices for less than massive audiences, for example, video, newsletters, leaflets, listservs, cassette recordings, even community radio, are one option. It is 'small' in that it is narrow-casted to a more targeted audience, and at a lower cost than commercial TV or radio (Coldevin & FAO, 2001).

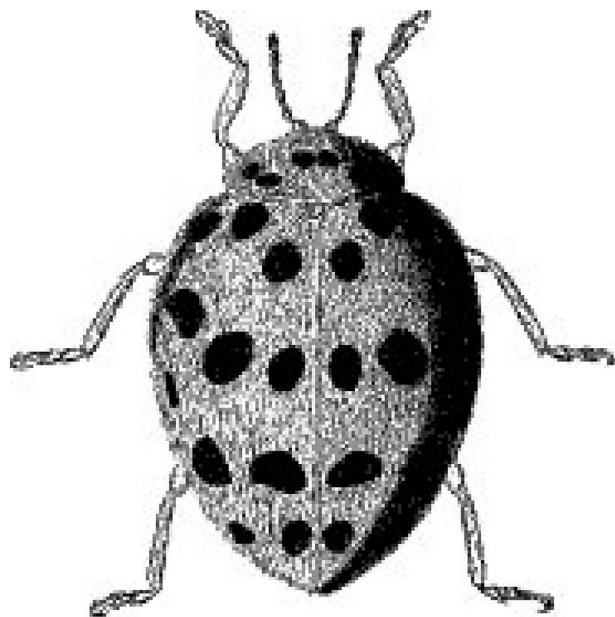


Figure 1 Serious, black and white line drawings are more effective than ill-conceived attempts at humour. Drawing of a ladybird beetle, a major predator of aphids (adapted from the *CABI Crop Protection Compendium*, for a book on extension exercises, Bentley *et al.*, 2003)

We suggest that another way of beating the cost *vs* quality dilemma, besides making media smaller, is to make face-to-face communication larger. Rogers (1983) writes that interpersonal communication is more effective than media for convincing people to adopt innovations. Face-to-face communication includes not just FFS and training-&-visit, but also big events like farm machinery shows and professional conferences (Rogers, 1983). This paper suggests a modest method for reaching larger audiences face-to-face; we call it 'Going Public'. We present our experience as a series of cases with short comments on each, and a final discussion.

Public Places

Every country has public places like markets, fairs, bus stations, rural clinics and ferry landing stages where strangers congregate to travel or do business. To talk with farmers in their home village, first the extensionist must contact local leaders to obtain permission for the meeting, return another time and wait for the meeting to start, and then go through preliminary formalities, all before beginning to deliver the agricultural message. The extensionist may have to offer a snack to keep people from becoming distracted late in the meeting. The local leaders have to spend valuable time inviting people to the meeting, and the local people miss several hours of work to attend. Much of this cost can be avoided by meeting in a public place, like a market. Preachers and politicians have been stepping onto soapboxes for centuries. While working on a project to develop extension exercises for FFSs, we wondered if an extensionist could also do the exercises in a crowded market.

Bolivia is a large, landlocked country in South America. At 1,098,591 square kilometres it is about the size of Spain and France combined. Technically, over half of Bolivia is in the lowlands of the Amazon basin, although most of the 7.7 million people (1997 population) live in the Andean region, which is where we do most of our work. Andean agriculture is based on complex crop rotations, usually beginning with the potato, but cycling through maize, broad beans, native tubers like oca and papalisa, ending with European grains like oats, barley or wheat. The Southern Andes are semi-arid, so only one crop a year is grown except where people have irrigation (Trawick, 2001). Because

of the rough terrain, farm communities are often widely separated, and a market town may draw people in from up to 60 kilometres away. Most Bolivian valley farmers speak Quechua, a Native American language (many are also bilingual in Spanish).

Development of the Going Public Method

In late 2001, most of the extension exercises we were validating were new, especially some on nematodes, which we designed in collaboration with Javier Franco, nematologist with PROINPA (Promotion and Research of Andean Products). The exercises have since been published in a bilingual, English-Spanish manual (Bentley *et al.*, 2003). Certainly some things like crop rotation or the performance of disease-resistant crop varieties may be more difficult to teach in a crowded market, than during repeated visits to a village. But if even some concepts can be shared with 200 people in one impromptu public session, the method is worth pursuing. Going Public allows a programme to explore a new topic quickly, forces extensionists to work in public settings where the audience may be brutally frank, allowing rapid and honest feedback. We present a few cases below, starting with the early Bolivian experiences and followed by Bangladesh.

We'll need a stall in the market

On 6 December 2001, as part of the Participatory Extension Exercises Project, with Janny Vos at CABI *Bioscience*, the senior authors asked Juan Almanza if he would be willing to lead some exercises with farmers in a weekly market in Tiraque, Cochabamba, in the Bolivian Andes. Mr Almanza, a master extensionist at the PROINPA Foundation in Bolivia seized the idea, adding, 'We'll need a *qhata*'. *Qhata* is the Quechua word for a stall in the marketplace. Like many Spanish-speaking people in Central Bolivia, Mr Almanza is proud of the Quechua language, and unselfconsciously uses occasional Quechua words even while speaking Spanish.

Tiraque is a small town, with a mayor's office, and a plaza, but no gasoline station and no bank. It is about four blocks wide. Six days a week there is little movement in Tiraque, but on



Figure 2 Wholesaling onions at the Friday market in Tiraque. Campesinos recognise the familiar faces of other people from neighbouring communities, who also attend regularly

Fridays, farmers throng in from the countryside to sell potatoes, onions and broad beans at the weekly market or fair. Traders, mostly women, come to buy produce or to sell the simple things that farm families need, from pots and dishes to mangos and tinned sardines (Figure 2).

We backed the pick-up into a corner of Tiraque's fair ground, between the women selling little mounds of hot chillies and the trucks of potato wholesale buyers. It was a typically fast-paced fair: people walked by hawking ice cream and pastries; one man was even selling copies of the constitution of Bolivia. People started to gather around us before Mr Almanza could get his materials out. Mr Almanza did not recognise anyone in the crowd, but he went straight to work, lowering the tailgate and covering it with a cloth, setting out a microscope, some bottles of nematodes, and some plant samples.

When Mr Almanza had five people together, he started to explain to them in Quechua: 'Rosario is a big problem in potatoes'. Rosario is the local name for the root knot nematode, *Nacobbus aberrans*. Within 10 minutes Mr Almanza had 30 people gathered around him. Some stood on tiptoes to see better. Mr Almanza explained that soil can become contaminated with *rosario*. He showed the people how to distinguish nematode galls from the nitrogen-fixing rhizobium on a broad bean plant, explaining that the nodules fertilise the soil, and that they are smaller and whiter than the nematode knots.

Mr Almanza showed them how to see the egg cysts of another nematode, *Globodera* sp., by

rolling a piece of newspaper into a drinking glass, adding a handful of earth, stirring in water and then pulling out the paper. Without being prodded, members of the audience asked many good questions, e.g. if the nematode cysts were the seed (*muju*) of *Globodera*.

Mr Almanza explained the control measures for nematodes: crop rotation and washing ploughs before taking them from one field to the next. The people asked many times how to get rid of or lose (*chinkapuy*) nematodes, especially by using a chemical. Mr Almanza moved on to another demonstration. Mr Almanza had previously prepared a sample of *Nacobbus* in water. He opened the bottle and poured the nematodes onto a small glass dish and put it under the stereoscope. People formed a line to look at the nematodes under the microscope. Then Mr Almanza asked them to draw what they saw, so he could tell if they actually had been able to see through the microscope (Figure 3).

A man came back to the group, carrying some earth from a nearby field in his hand. Confidently, without pausing, the man did the glass-and-paper test himself. A second man rejoined the groups, carrying a handful of soil that he had collected from the soil clinging to potatoes in a sack. He also did the test for nematodes.

The audience was in a good mood, comfortable, and surrounded by their friends. They joined in, spontaneously doing the simple lab test themselves, confidently asking questions and looking through the microscope. Giving public demonstrations in a fair obliged Mr

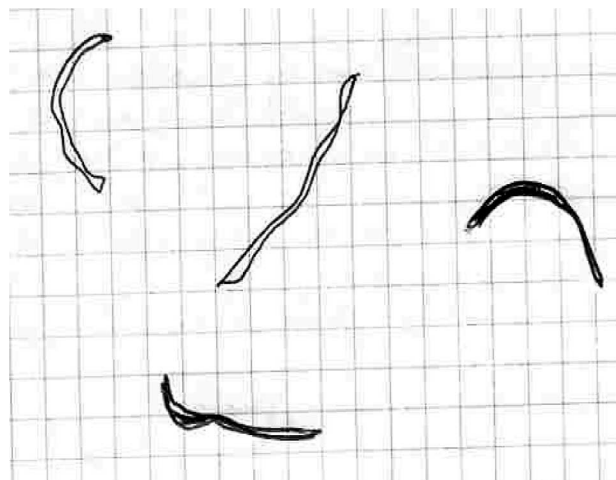


Figure 3 Farmers drew nematodes, after seeing them under the microscope

Almanza to be concise. He would show one person the microscope, then turn to the crowd and teach them to look for nematode cysts. He used real plants to show the difference between nematode-infested roots and healthy roots of broad beans. All three exercises took about 10 minutes, so Mr Almanza cycled through them several times over 2 hours. Some people were so interested they stayed and watched the demonstrations several times. Other people watched once and then left. Several women watched the demonstration; Mr Almanza invited them to look into the microscope and they turned and walked away. Later he would enlist the help of a woman extension agent to try to reach the women. We counted at least 60 people from about 10 different places. Some of them had come from 60 km away. Visiting each of those remote communities would have taken us days, but at the fair we talked to them in 2 hours.

Mr Almanza did more than teach; he (and the rest of us) learned from the farmers. We learned that they are concerned about nematodes and want to learn more. They are open to chemical control, and they demand that researchers design a technique to eliminate nematodes. The local people expressed interest in improving soil fertility and they may have some knowledge already about nitrogen-fixing rhizobium on leguminous plants, but that is a topic for further research.

Loudspeakers

On 8 February 2002, Juan Almanza and colleagues had a follow-up visit to the Tiraque fair,



Figure 4 A farmer and Mr Almanza look for *Globodera* cysts on the newspaper (L). Others look at *Nacobbus* through the stereoscope (R). Small-scale merchants (background)

where they showed people how to grind up root knots and observe the nematodes (*Nacobbus aberrans*) inside them under the microscope (Figure 4). Mr Almanza observed that some people had difficulty seeing through the stereoscope lens, which had also been a problem the first time we went public in Tiraque. This time when Juan Almanza arrived at the market, he met don Pepe, a man who owns a pesticide shop and a radio station in the nearby town of Colomi. Don Pepe sells chemicals from his pick-up truck at the Friday markets in Tiraque. Don Pepe thought that Mr Almanza's message was so important that he loaned the PROINPA extensionists his loudspeakers, to announce the demonstrations. Aside from the obvious irony of announcing a demonstration on sustainable agriculture from the loudspeaker of an insecticide salesman, we see that local merchants may be more than happy to collaborate with extensionists. In a sense, this pesticide salesman has already 'gone public', since he uses a radio station, loudspeakers, and visits to various weekly markets to spread his ideas. In many ways, Going Public is similar to time-honoured methods that other people use to get a message across.

One young girl showed a great interest in the nematodes, performed the newspaper test herself with Mr Almanza's materials, and then proudly turned to show the crowd of 50 or 60 people the nematode cysts clinging to the paper.

A meeting at a truck terminal

As Daniel Vasquez put it, many institutions act as though their messages were state secrets: as though they did not really want the public to know about them. Daniel Vasquez is a veteran agronomist in Sucre, Bolivia. When we told him about our experience in Tiraque, he immediately agreed to try it, but with peach problems. Fewer towns around Sucre have weekly markets, so Mr Vasquez suggested going public in an open air, public transportation terminal on the edge of the city, where campesinos wait to take passenger trucks back to the mountains and canyons of northern Potosí.

Mr Vasquez was concerned that there were few trees near the truck terminal, so he brought some peach branches with him when we went there on 12 December 2001. Mr Vasquez borrowed a small wooden table from a shopkeeper, set it up in front of the waiting trucks, and spread his specimens on it. As soon as people

saw him, they gathered around, and asked him what he was selling. Mr Vasquez said he wasn't selling anything, and explained how to identify peach aphid damage, and manage the insects. He began by showing people the damaged peach branches, and photos of aphids and fungus-infected leaves (Figure 5).

We based this exercise in part on local knowledge – and local misperceptions. During previous fieldwork, we learned that farmers confuse aphid damage with peach leaf curl (caused by the fungus *Taphrina deformans*), and they call them both by the Quechua name *musuru*. At first we found it hard to believe that people could mistake aphids for a disease, since the aphids are clearly visible, and the fungus turns the leaves a bright red. But both problems cause the leaves to curl, and occasionally aphid-infested leaves do turn red. So a farmer looking at a whole grove, without opening individual leaves, might confuse the two. Mr Vasquez explained the difference succinctly, in Quechua, and the truck passengers admitted that they had seen aphids on their peach trees, and that they called aphids *yana khurus* (black bugs).

As the farmers crowded around, Mr Vasquez asked them about ants. People said that there are ants with aphids. Some said that the ants eat the aphids. Mr Vasquez explained that the ants 'milk' the aphids and protect them. Wasps, ladybird beetles and the larvae of hover flies all eat aphids. If we can keep the ants away from the aphids, then the wasps and beetles and flies will be able to eliminate the aphids.



Figure 5 At the passenger truck stop in Sucre, Mr Vasquez helps farmers diagnose aphids, using samples of live trees

The extreme myrmecophilous homopterans have evolved to the status of domestic 'cattle'. Like artificially bred animals, aphids in particular have reduced or lost the usual defensive structures found in free species, including the modification of the legs for jumping ... Some species of ants go so far as to care for the homopterans inside their nests. (Hölldobler & Wilson, 1990: 527)

Mr Vasquez suggested that farmers could tie a piece of wool around the trunks of peach trees, to keep ants from climbing them. He added that a dusting with a little insecticide might be helpful. In later experiences he recommended a 4% powder of Malathion, a relatively low-toxic, class III insecticide, available in local shops for \$1.40 a bottle. In earlier studies we had found that farmers were spraying the whole tree, not just a ring of wool around the trunk, and that they were spraying with much more toxic insecticides. Wool ring barriers with a little Malathion were a far lesser evil.

The truck terminal was noisy. People clambered off and on trucks. Cars drove by. One ice-cream vendor persistently honked a little rubber horn. Through it all, Mr Vasquez maintained a dialogue, asking and answering questions, showing photos and live specimens, and asking people what they saw in them. He went through his simple, agroecological argument several times, for the benefit of newcomers who were constantly arriving. His chain of logic was:

- Aphids are an insect, not a fungal disease.
- Aphids have natural enemies.
- Ants care for aphids.
- Keep ants away from aphids with a wool ring instead of spraying the whole tree and the natural enemies will eliminate the aphids.

Be interesting

In a crowded public place, an extensionist cannot afford to be boring. When Mr Vasquez went public later, at the Sunday market in the nearby town of Tarabuco, Chuquisaca, he drew such a large crowd that the women who were selling vegetables nearby asked him to leave, because his audience was blocking the customers. So Mr Vasquez walked to the town square, and sat down to write his notes, but several people followed him there, and asked him to tell them more about peach aphids (Figure 6). It takes a certain talent to be able to chat with a crowd, pull them in with questions, explain things simply and directly in the local vernacular, and do so



Figure 6 Farmers followed Mr Vasquez from the market to the town square, to ask for more information about peach disease

in a public place where crowds of farmers are passing through.

One reviewer of the method suggested that the need for 'a certain talent' might be a constraint on Going Public. Then, in February 2003, we saw an example of this when one of us explained Going Public to a group of Vietnamese professionals, and then encouraged them to try the approach at a market. One young woman, Ms Nuong, used the back of a rickshaw carrier to enthusiastically display plant samples and to discuss disease symptoms with people in the market. Ms Nuong was not the only one who was able to intuitively adopt Going Public, but there were some people who could not overcome their stage fright. On the one hand, there is a role for shy people, for example, helping to prepare visual aids and writing down the questions farmers ask (to document farmers' concerns). We admit that the need for talent is a limitation for Going Public, but the same is true for any other extension method. Designing and running a farmer field school also requires some talent, but it is still worth doing. Fortunately, the talent required to Go Public is probably not uncommon. Most veteran extension agents seem to be self-selected for public speaking, and perhaps half of the people in any given institution feel comfortable speaking to a group of strangers in a market. Besides, Going Public sessions can be easily incorporated into an FFS programme and so make optimal use of the communication skills of experienced staff.

NGO workers equally have a natural talent for communicating with village people. When another one of us explained the Going Public method to Ms Elise Pinners, who is working for a Belgian NGO in Vietnam, she immediately

agreed to try it out with her colleagues, even without any of us being around to provide guidance. Going Public can provide a cheap and quick platform for farmers to exchange their learning and goods.

Borrowing materials

As part of the Participatory Extension Exercises Project, we explained Going Public to some of the extensionists from CIAT/Santa Cruz, Bolivia. On 3 March 2002, Steve Eguino, Olivia Antezana, and Mayenka Valdivia borrowed a television set from the mayor of Comarapa, Bolivia, and set it up at the town market (Figure 7). They had to overcome several problems. Mayenka had to be at the market at 5:00 am to reserve the stall. Then it started to rain and the team had to buy a tarpaulin and rope to make a shelter; women who were selling in nearby stalls helped them hoist it. The extensionists attracted a small crowd and gave a brief demonstration on potato diseases, using a microscope and other lab equipment. The extensionists had to talk loud enough to be heard over the blare of music coming from nearby stalls where people were selling CDs. Mr Eguino went to the office of the market and announced the demonstrations over the loudspeaker, to attract a larger crowd.

The CIAT extensionists did exercises much like those Juan Almanza had done in Tiraque, except that Mr Eguino attached a video camera to a stereoscope, to show the nematodes on the television screen. In 3 hours, the extensionists performed the exercises twice, while farmers did them another four times.



Figure 7 Early Sunday morning, setting up the weekly fair, just outside the municipal market in Comarapa, Santa Cruz, Bolivia

The CIAT team showed a lot of initiative and creativity, getting up at dawn, setting up in the rain, and using audio visual equipment. Televisions, microscopes and video cameras helped Mr Eguino to not just extend a technology, but to facilitate farmers' understanding of small organisms, and to do it for a crowd in a public place. Not all extensionists have the kind of equipment that Mr Eguino and his colleagues used. But most of this equipment was borrowed: the TV and loudspeakers, even the tables. The microscope was on loan from a laboratory. The main thing is not having a lot of equipment, but having imagination and self-confidence.

After CIAT staff went public at the market in Comarapa, they became more interested in face-to-face communication with farmers, and set aside some of their limited funding for more Going Public events, which they held in neighbouring towns. Some enthusiastic farmers even went to their local municipal governments to ask for similar types of training in their communities.

After the first experience, CIAT evolved mobile stands that they could take from community to community. Local response was so strong that on 15 April 2002 the community of Comarapa formed a CIAL for women and children on potato pests and diseases. It was so successful that two other CIALs for women were formed in nearby communities.

Problems begin to appear

In later visits to the fair in Colomi, another town in highland Cochabamba, Bolivia, Juan Almanza again went public with nematodes.

This time he noticed two problems. First, he explained the difference between root nodules on legumes, which fertilise the soil, and nematode galls, which are pests. However, Mr Almanza was frustrated that he could not prove to the farmers that root nodules improve later harvests; he could only tell them so. In a CIAL or a FFS he would have been able to demonstrate that legumes fertilise the soil. A second problem was that it was difficult to involve women in the marketplace. Mr Almanza thought that a woman extensionist might be more successful. PROINPA agronomist Cecilia Soliz spoke in Quechua with the women farmers in the audience, and tried to elicit responses from them, but they just walked away, chatting softly among themselves. Mr Almanza also tried the same nematode exercises in CIALs, which he found to be a more comfortable setting for the demonstrations. Among other reasons, in the CIALs there was time to walk from field to field, testing the soil from each one, rather than having to bring soil to a market to test.

The fair in Colomi is crowded, and Juan Almanza felt frustrated because there was not much room for the farmers to gather around the truck. Some farmers were worried about selling their potatoes, and simply glanced at the microscopes and walked by. Mr Almanza was starting to lose heart when he recognised a farmer he knew, Albino Carvalho, who stopped to greet him. Mr Almanza asked don Albino if he had ever seen nematode egg cysts. Don Albino said he had not, but he was interested, so Mr Almanza gave his talk and showed don Albino how to see them, using a glass of water



Figure 8 Don Albino looks for *Globodera* cysts on the newspaper

and a piece of newspaper (Figure 8). A crowd soon gathered around and the exercise was a success. Soon other farmers went to get soil samples of their own, to test for nematodes, which Mr Almanza felt added credibility to the exercise. As this case shows, speaking in a marketplace is not easy, and even an experienced extension agent can become frustrated. A friendly face in the audience can help. Some extensionists may want to try taking along a farmer friend with them to the public place, to give them support and confidence (see the case below, 'a farmer goes public').

Easily distracted

On 3 March 2002, one of us and three colleagues went public at a market in Binjai, South Kalimantan, Indonesia. Rodi, Andreani and Yani wanted to explain the differences between pepper diseases. They obtained permission from the local *camat* (head administrator) who suggested setting up a stall in front of an office. Farmers passed by because the shaded, quiet spot was ten metres away from the bustle of the market. We moved to a more crowded and busy place, between a taxi stand and fruit seller and immediately began attracting people who came to see photos and specimens of pepper diseases. It was difficult to explain about virus diseases; though many farmers appreciated the information and photos that illustrated differences they had visually recognised but had not fully understood. The extensionists were less successful in sustaining a dialogue, mainly because they were working in an unfamiliar market with farmers they did not know. They

were also distracted by idle bystanders who began making small talk that had nothing to do with pepper plants. This case shows that talking and demonstrating in public is not as easy as the first few examples may lead one to believe. It takes talent that not everyone has. Both Juan Almanza and Daniel Vasquez are master extensionists; we gave them a concept (in Spanish), which they expanded and gave extemporaneously (in Quechua) in a crowd of jostling strangers. Not everyone can go public: we recognise that it is a challenge.

A farmer goes public

El Puente ('The Bridge') is a long bridge over the Mishka Mayu River in the high, rugged Bolivian Andes. There is no nearby town, and Quechua farmers grow potatoes above 3000 metres, for almost 100 km in every direction. Every Monday they meet at a large open space by the bridge, to sell potatoes to middlewomen, and to buy supplies. On Monday, 4 February 2002, PROINPA extensionist Juan Vallejos drove a pick-up truck to El Puente, and pulled up at a vacant stall, where four farmers were already starting to drink *chicha* (maize beer). Other farmers assumed that Mr Vallejos was selling seed potatoes, so they gathered around. Actually, Mr Vallejos was demonstrating the *bio-ensayo*. This is a way of testing seed potatoes for nematodes, by putting them for 30 days in a plastic bag full of earth, then examining the roots for root knot. Although Mr Vallejos is a seasoned extensionist and fluent in Quechua, he brought along Don Lucio, who is a farmer and FFS graduate. Don Lucio engaged the crowd and demonstrated the *bio-ensayo* for 2 hours, talking with the people about crop rotations. Mr Vallejos felt that a farmer who went public had more credibility with strangers than an agronomist. The farmer was banking on his social capital (Pretty & Buck, 2002) to Go Public successfully.

Don Lucio obviously knew many of the people in the crowd. When he showed a potato sample and asked them 'What is this?' one man responded that it was nematode damage.

'No, let someone who is not a member of the field school answer', said Don Lucio. He continued to ask questions of the people in the crowd, calling them '*compañeros*' (literally companions, used in Bolivia to stress egalitarian relations between two people). Don Lucio listened while

people suggested using chemicals to control nematodes, then explained that instead they could use resistant varieties, green manure, crop traps and crop rotation instead.

The session with Don Lucio was notably animated. Another farmer asked again about chemicals to kill nematodes.

'You only think of chemicals, but as you will see in this practice, there are other ways to have fewer nematodes'. Then he asked, 'If we only use chemicals, what will happen to our soils and our food?'

A woman in the crowd replied, 'The potato will be poisoned and we could die'.

Eventually the crowd died away. Don Lucio started to pack up his materials. His friends, the other farmers from the field school, had been watching from a distance. They walked over and helped him pack. A few other farmers approached and asked if Don Lucio could give the same demonstration in their communities.

This case suggests another, more sophisticated role for field schools: giving farmers concepts to share with their neighbours in other settings. Going Public could add extra value to FFS, e.g. by providing FFS graduates with a platform to share their new agricultural skills and knowledge with others.

The enthusiastic farmers of Bangladesh

Few modern nation states make a greater contrast than Bolivia and Bangladesh. Although both are poor, tropical countries, with an important subsistence agricultural sector, the similarity ends there. Bolivia has some of the highest terrain on Earth, and half of Bangladesh is barely above sea level, in the delta of the Ganges and Brahmaputra River Systems. Bolivia has a low population density (seven people per km²), and Bangladesh is over 100 times as densely populated (936 people per km²), implying major differences in distance and in communication and transportation costs. Bolivia is semi-arid with generally poor soils. Bangladesh is humid, with rich alluvial soils.

The national language of Bangladesh is Bengali (or Bangla), while many educated people also speak English. Rice is a major crop, although jute, lentils and other pulses, wheat, vegetables and other crops are also grown. In the countryside, about 10 villages are commonly linked in a market system that centres on a bazaar or *hat*

that occurs once a week or more frequently (Harris & Lloyd, 2001).

Two of us have several years' experience in Bangladesh. Soon after our experiences with Going Public in Bolivia, we decided to try the method in Bangladesh, as part of the Seed Health Improvement Project (SHIP). Bangladesh has recently become self-sufficient in rice, with a production of 39 million tonnes in 2001, an increase of about 40% since the early 1990s (FAO, 2002). This has mainly been the result of the introduction of a new, irrigated cropping cycle during the dry season, and improvement of the existing rain-fed one. The intensified cropping cycle, mainly triggered by new rice varieties and motorised tube-wells, has created a particular new problem: 'How to dry seed during the rainy season?' A combustion dryer, recently developed by researchers on-station, uses rice bran as fuel and electricity to power a fan. But farmers rejected this, due to its high price and the difficulty of keeping track of the right temperature.

Women have often, although unintentionally, been left out of traditional extension, even FFS (van de Fliert, 1999). As women in Bangladesh have the main responsibility for seed drying, Van Mele and project staff from the Rural Development Academy (RDA) held a 2-hour session with 30 women of Maria village near Bogra, in northern Bangladesh, in April 2001. The women stressed that drying seed in the rainy season was a priority for them. After exploring local concepts and ideas related to the drying process and exchanging ideas with researchers, the villagers themselves suggested making drying tables. Both technical staff and the rural women were delighted with the idea.

During the next session in June 2001, the women brought their husbands along, to stimulate household interaction. Researchers helped villagers draft a matrix showing criteria for a good drying table (Table 1). This matrix was transferred to an A4 sheet, photocopied and distributed to all project participants, and as such provided an individual memory aid of ideas developed by the community. During the next village meeting on seed drying, in January 2002, nearly all of the 30 households had made a table of some sort, and some people already acquired a good deal of experience using their table.

Drying seed on a table allows women to quickly bring their seed in the house when it suddenly starts to rain. As Rubina, one of the project

Table 1 Maria villagers' criteria for drying tables

<i>Criteria</i>	<i>Description</i>
Seed drying	Drying should be possible in any season
Portability	The table should be easy to move so that the women can always move the table to a place in their home yard where there is no shade
Cost	The overall production cost should be kept to a minimum
Material	Materials used should be locally available
Height	The table should be high enough so that the seed is protected from chickens and playing children, who often mix seed from different varieties. Proper height should also relieve (or prevent) back pain
Size	It should be small enough to be moved easily by one or two people. The width is important; tables should be easily taken through the door of the house to be used for indoor purposes
Strength	Opinions were divided for this criterion. Some people wanted strong and enduring tables, while others said that if it broke down after a year, that would be no problem, because they can always make a new and better one as long as it is cheap
Multipurpose use	People also came up with clearly different ideas about what other functions the table should accommodate. Manual seed cleaning, threshing (which in Bogra has so far been done by beating the panicles on the earthen floor), drying other materials, household purposes, dining table and baby cot were all possibilities mentioned at this stage
Slanting	This idea was actually introduced by the project staff, but was not retained in any of the designs
Folding type	One household had very limited space and suggested a foldable table, which they could put on their roof whenever not in use

woman puts it: 'Before I dried seed on a table, with a sudden rain all my efforts could be in vain. When I was one minute late to bring the seed inside the house, I had to start all over again'. People also feel they can now dry seed even if the floor is wet and there is no direct sunlight.

To share experiences with other people in the community, and because of the difficulty of bringing all these designs in one place, a village photo exhibition was organised to further spread the idea and raise local awareness. All tables were photographed with their respective owners and displayed in a public space with a few live models. Following the photo exhibition, a Going Public exhibition with different models of community-made drying tables was held at an important cross-road between two villages. This example shows that the potential of Going Public is not limited to sharing knowledge about pest and disease management, but also provides a feed-back mechanism when developing new technologies.

On 25 April 2002, farmers and researchers from SHIP went public at a local market (*hat*) in Bogra. Farmers displayed three different types of seed-drying tables, while researchers used posters and potted rice plants to show the life

cycle of the brown spot disease and to explain that manual seed sorting helps manage brown spot in rice. The project staff opened the 'show', but within half an hour an enthusiastic farmer-innovator, Mozzafor Hossain, spontaneously took over from the scientists, and gave the message in a clear, straightforward manner (Figure 9).



Figure 9 Farmer Mozzafor Hossain teaches his audience a test they can do in their own fields to determine if it is worthwhile to manually sort their own seed



Figure 10 Bangladeshi farmers look at rice seed with a magnifying glass at a Going Public session

In less than an hour the villagers trained in the project were fully explaining to passing farmers about how they have improved their seed quality by seed sorting and proper drying. They not only explained the output of these activities, but also challenged the farmers to test things for themselves, and explained how they could do this (Figure 10).

All involved in the activity were clearly excited about the opportunities this new approach had to offer. About seven farmers from Maria village attended and fully participated in the Going Public. Later they said that they will Go Public all by themselves during the next *hat*.

In Bangladesh, Going Public was used both as a platform for farmer learning about disease management, and as a feedback mechanism for fine tuning a mechanical technology. Both approaches yielded different results when different types of facilitators were involved. To assist in identifying the right type of community innovator for these specific farmer-to-farmer extension activities, a new PRA tool called the Innovation Tree was developed (Van Mele &

Zakaria, 2002). One type of innovator has a modest, mild and inquiring character. They easily engage in farmer-to-farmer knowledge strengthening, both within and outside the community. The other type of innovator has a strongly competitive character. They are more eager to go outside the community to promote the technology, rather than getting engaged in educational activities.

Discussion

Farming is hard work, but a trip to market is a kind of farmer's time-out: a special time when rural people hope to have some sort of different experience. This is true for much of the world, not just Bolivia or Bangladesh. Historian John King Fairbank described how each village in pre-revolutionary China was linked to a market town about 5 miles away. Markets were held at regular intervals (every second, fifth and eighth day, or every third, sixth and ninth day), and people from surrounding villages would come in, to sell a bit of produce, buy something from another area, meet friends at the tea shop, at the temple or on the way. 'In 10 years a farmer would have gone to market a thousand times' (Fairbank & Goldman, 1998: 22).

Farmers expect to see strangers at the fair, perhaps even foreigners. Farmers at fairs walk up to extensionists, asking questions confidently, with none of the shyness or suspicion that one may find on first visits to a Bolivian village. Country fairs are social spaces dedicated to brokering goods and ideas. In her perceptive account of market women in the Andes, Mary Weismantel compares markets with theatres, where people perform to attract buyers. The weekly fairs deep in the countryside create a hole in the Indian territory, where outsiders have temporary licence to come (Weismantel, 2001).

It is possible to share complex agroecological information, including diagnosis of the pest problem, bioecology of the problem and management from the back of a pickup truck or from a market stall. Going Public is not a method for shy people, but it generates excitement in the audience. It allows scientists, extensionists or experienced farmers to show people specimens and photos, to distribute materials, explain simple tools to help farmers diagnose problems or test new management options and get feedback, which is not possible on the radio. Going Public

is a quick way for scientists to see how farmers react to specific ideas (e.g. accepting drying tables in Bangladesh, astonishment at seeing nematodes in Bolivia). Going Public can reach many people from many communities, in a single morning, unlike most face-to-face methods. As it does not *a priori* select participants to attend a training, it is open to a wider section of the community.

In public settings people may be more open to visiting with a stranger than in a village. In a public place the extensionist may be able to give a message in 5 or 10 minutes, avoiding a long meeting in a village. Going Public is harder than giving a talk to a quiet audience in a village meeting, but it also provides the thrill of the stage. One of the greatest constraints for promoting wider use of farmer-to-farmer exchanges lies in the quality of available facilitators (Pretty, 1995), a point that will be equally valid for Going Public. Good facilitation skills will definitely add value to the method, as does the selection of appropriate learning tools. Fortunately Going Public does not need to start from scratch. Over the years FFS programmes have developed a rich source of well-trained extension people and farmer trainers, along with numerous validated discovery learning exercises, which could be drawn upon. Going Public may be a useful part of an extension method tool kit that includes Farmer Field Schools and radio shows. FFS and other recent extension methods have been built on social learning (Pretty & Buck, 2002). We have shown that FFS graduates (like Don Lucio) can take social learning one step further, by Going Public with neighbours as well as with farmers they may only know slightly, like the people one sees at weekly markets.

Going Public is certainly flexible. The training exercises one can do in a public place need to be short and so may be better for showing farmers how to diagnose problems than for discussing pest and disease management. In an FFS farmers can learn throughout the season, enabling them more to deal with the bioecology of pests. We admit that this is a new method, and that we have only had time to document the basic approach and suggest some ways in which it could be useful. We have not yet tested the method's effectiveness in the long run. We hope to set up formal programmes using Going Public in a more systematic manner. In the future, we would like to combine public demonstrations with massmedia

and face-to-face extension like FFS, in the following ways:

- Advise farmers over the radio where and when extensionists will give public demonstrations in fairs or markets.
- Give talks on the radio or television; tell where people can meet extensionists to ask questions and get materials (like seed, literature).
- Invite farmer trainers from FFSs to travel to fairs, to give presentations.
- Use short discovery learning exercises validated in FFS programmes.

In conclusion, we suggest that Going Public will work in any region that has a population of rural people who attend fairs or go to market or otherwise congregate in public, at places where they are used to seeing outsiders come to exchange information with them for instance by buying from them or selling them things. If Going Public works in countries as different as Bolivia and Bangladesh, there is no reason why it will not work anywhere.

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Note

1. 'Profesor' means teacher, not necessarily professor. 'Yarumo' is the Colombian Spanish word for the *Cecropia*, a large woody plant with fan-like leaves that soon towers over the others in abandoned clearings. The name was chosen for its optimism, to suggest that new agroecological ideas can help farmers to prosper like the successful *Cecropia* plant.

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