MULTIPLE APPROACHES TO ENHANCE COMMUNICATION BETWEEN RICE FARMERS, RURAL SERVICE PROVIDERS AND SCIENTISTS

Dr. Paul Van Mele, Program leader Learning and Innovation Systems, Africa Rice Center (WARDA), 01 BP 2031 Cotonou, Benin explains the various ways that knowledge is transferred to growers and associated individuals in less developed countries

Keywords: Learning, knowledge management, agricultural extension, education, communication, advisory services

Introduction

When does a pest become a major problem? We entomologists, pathologists and weed scientists dive into our literature database and with a few clicks of the mouse come up with references that add both credibility and weight to our statement. But how do farmers in developing countries perceive the importance of pests and how do they get someone to do something about it? To quote Bentley *et al.*, 1995 "Peasant farmers do not know everything. They often know nothing of causal agents of disease, of insect metamorphosis, of parasitoids or even of arthropod predators". Farmers know even less about diseases than they do about insect pests, followed by weeds. So how do we develop a common ground of understanding and stimulate learning to improve communication between actors?

Adding a poverty aspect further complicates matters. The need for social inclusion becomes more stringent when developing and promoting pro-poor technologies and markets. But private businesses, scientists and governmental extension agents often have little or no experience in working with the poorest, and with women in particular. Illiteracy rates are higher among women and poorer people, their personal networks are less elaborate and transaction costs (which represent time and costs to access information, services, markets and technologies, negotiate contracts) are relatively higher compared to better-off farming families. High transaction costs not only affect the ability of the poor to access support, but also affect advisory services who want to target the poor.

While no simple solutions exist, recent experiences in developing countries – including farmer field schools (van den Berg & Jiggins, 2007), Going Public (Nash & Van Mele, 2005; Bentley *et al.*, 2003), rural plant health clinics (Boa, 2007) and the use of media (Van Mele, 2006; Heong *et al.*, 2008) – give us pointers as to how communication between the various players in research and development (R&D) can be improved. I discuss these approaches and explore the potential of building synergies. I then present a new approach called '*zooming-in, zooming-out*', which has special relevance for the development of learning support tools. Recognising the political culture in fund allocation, these new insights could contribute to better priority setting at various spatial and temporal scales, and to an increased focus on processes underpinning communication between R&D actors.

Multiple approaches

Farmer field schools (FFS)

The idea to replace pest management recommendations with education based on experiential learning brought about a major paradigm shift in extension (Röling & Pretty, 1997). Farmer field schools use experiential learning to improve farmers' knowledge, as well as their experimentation and decision-making skills (Winarto, 2004). A field school usually comprises season-long regular group meetings with a set pattern of activities. This includes agro-ecosystem analysis and experimentation in a common field on a regular basis. But a field school also involves presentations and special topics along with group building activities. Developing discovery learning exercises that help farmers to understand new agro-ecological concepts is a challenging task for scientists (see Figure 1).

During the Seed Health Improvement Project in Bangladesh, training on seed sorting and flotation had been going on for several seasons, when, in 2002, I initiated the development of discovery learning exercises with national scientists. Based on his life-long experience, one of the senior

Figure 1: **Discovery learning exercises for integrated pest management are mostly developed for farmer field schools, but can be equally used in videos or Going Public sessions.**

DOI: 10.1564/19dec08

entomologists was convinced that rural women did not know the relationship between seed moisture content and insect infestation level. However, developing this into a discovery learning exercise, proved such a challenge that the idea was omitted at the end of the 2-day workshop. Only when a year later we conducted our script research to produce videos on seed health, and assessed women's knowledge in a few communities in more detail, we found out that they all knew that high seed moisture leads to high insect infestation. Village women indeed did not know that with higher humidity insects lay more eggs and go through their life cycle faster, but they knew about the cause-effect through experience. However, women did not know that air could still pass through their earthen pots after they had carefully closed the lid. Only then we understood that the subject should not be on insect life cycles and their ecology, but on porosity and how to make seed storage containers more airtight.

Although impacts have been considerable (van den Berg & Jiggins, 2007), questions are raised about both social inclusion (relevant to group-based approaches and not just FFS) and diffusion of knowledge (Tripp *et al.*, 2005). Poor women often sell their labour and find it difficult to participate in regular training sessions. In various cultures, poor women also avoid contact with men with whom they have no direct kinship relation or simply avoid public places altogether.

Participatory learning and action research (PLAR)

Based on the understanding that the socio-economic and bio-physical conditions for in inland valley rice cultivation in Africa are much more complex than for the irrigated rice schemes in Asia (where FFS was first developed) a team of the Africa Rice Center (WARDA) developed a slightly different approach, Participatory Learning and Action Research (PLAR) (Defoer *et al.*, 2004). Compared to FFS, PLAR put more attention on farmers experimenting in their own field rather than in a common field. Also, each farmer can test a different set of ideas, with new 'variables' added as the season progresses.

Working closely with farmers, scientists and PLAR facilitators learnt about farmers' creativity to deal with birds. For instance, farmers in Zianso village in southern Mali deposit bits of hair of blind people in the four corners of their rice field, and when birds arrive farmers believe the birds lose their direction. When people use 'magic' in agriculture they are expressing anxiety about something over which they feel they have insufficient control. Documenting these practices is a first step to being able to offer a technical solution later. As this example shows, birds are a serious problem in tropical agriculture, and they demand much more attention from research. Many experiments were based on trial-and-error. To reduce bird damage the president of the group in Zianso modified the planting date of his NERICA (New Rice for Africa, a range of inter-specific varieties) to ripen slightly after his adjacent maize field. He installed old fishing nets between the two fields. When the birds moved from the maize onto his NERICA field they became trapped in the nets. The farmer combined this with scarecrows and also relied on his children hitting empty cans when the flocks arrive.

PLAR, like FFS, works with groups of farmers and allows for peer review. Scientists in Ghana also noticed some farmers using fish nets to protect their rice field from birds. They shared it with PLAR farmers and after approval included it in radio programs; they also made a short video on it.

Going Public

Here extensionists or scientists go to public places, such as markets, to interact with farmers. Going Public was first developed in Bolivia followed by other countries (Bentley *et al.*, 2003). In north-eastern Bangladesh, the Agricultural Advisory Services (AAS) had heard many farmers complain about rice bakanae disease, caused by *Fusarium moniliforme*. By Going Public with live samples of the disease, AAS staff learned many different local names that farmers used to describe bakanae disease. Farmers knew and recognized the symptoms, but they did not know it was a disease. In another Going Public session, scientists from the Bangladesh Rice Research Institute (BRRI) learnt that farmers in Gazipur mainly referred to bakanae as *sat*, meaning off type or mixture of different varieties (as bakanae infested plants are

PROYECTOS DE INNOVACIÓN TECNOLÓGICA APLICADA | BOLIVIA

Arroz en Barbecho y en Pampa — HOJA VOLANTE 12

Cómo cosechar más arroz

Sembrando en barbecho y en pampa se puede cosechar más arroz, a menor costo que en monte alto, y además habilitamos los suelos abandonados. Es posible sembrar en barbecho y en pampa sin quemar; así preservar los bosques para nuestros hijos y nietos.

Pruebas de arroz con las comunidades

Hicimos pruebas por un año el 2004 en tres comunidades: San Juan de Agua Dulce, Nueva América, y Pedro Ignacio Muiba, en el municipio de San Javier, Beni. Sembramos 15 variedades de arroz en pampa, en barbecho y en monte alto.

No usamos tractor, sino que lo preparamos con carpida y basureada en pampa, y en barbecho usamos el rozado y el basureado, sin quemar. En el monte alto seguimos las prácticas tradicionales de roza, tumba, picado, quemado y chafreado.

No es necesario quemar

Cómo lograr altos rendimientos

Producción en barbecho y en pampa con variedades adaptadas, que dan entre 350 y 480 arrobas de arroz por hectárea. Y ahorra casi la mitad del trabajo. Se puede controlar las malezas con carpida y con químico (2-4D, un litro por hectárea y Propanil, 8 litros por hectárea).

En las pruebas que hicimos la variedad JISUNÚ salió 4810 kilogramos por hectárea. La PAITITÍ dio 4745 kilos por hectárea y la TUTUMA dio 4432 kilos por hectárea. Y en pampa la variedad IAC-108 salió con 5200 kilos por hectárea, la PAITITÍ con 4900 y EPAGRI-109 con 4820 kilos.

Las variedades locales rindieron mucho menos, unos 3000 a 3200 kilos por hectárea.

Arroz en la pampa

En Beni, se cree que hay que quemar para tener suelo fértil y para controlar las hierbas. Pero al no quemar, el suelo es más fértil, porque no se pierden los rastrojos, que son alimento para la tierra. Además, el suelo es delicado, y el fuego lo daña.

Producción en pampa y en barbecho es fácil de manejar. Tiene menos costo de producción, porque hay menos trabajo. El suelo no quemado es fértil, y rinde más que el chaco en monte alto, especialmente si siembran variedades nuevas.

Se puede sembrar en barbecho o en pampa entre mediados de octubre y fines de noviembre.

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Es un PITA de la Fundación Trópico Húmedo
Esta hoja volante se produjo por FIT22 con la asistencia de Jeffery Bentley (antropólogo agrícola) y Eric Boa (Clínica Global de Plantas)

Figure 2: **Fact sheet on growing rice in Bolivia. Written by extension workers who work in the area and who know local conditions and farmers.**

clearly elongated), or as *pata sada*, meaning white leaf (leaves of infested plants turn pale). Although the names and interpretation given by farmers has potential, there is a lot more to learn about their local knowledge on diseases. Going Public helped to gauge farmers' knowledge quickly and improve the development of user-friendly fact sheets on bakanae disease, which in turn were used for future sessions. The Going Public approach has been used for more extensive extension campaigns on banana *Xanthomonas* wilt disease in Uganda and Napier grass stunt disease in Kenya (Boa *et al*, 2005). AAS continue to use Going Public for specific plant health problems in Bangladesh on a regular basis, as part of a programme of providing plant healthcare through plant health clinics.

Rural plant health clinics

For nearly a decade, Eric Boa and colleagues from CABI in the UK have set up and monitored rural plant health clinics in 17 countries (see also www.globalplantclinic.org). As of July 2008, there are more than 80 independently run clinics held regularly in nine countries. Key examples are Bolivia, Nicaragua, DR Congo, Uganda, Bangladesh and Vietnam. The idea behind the clinic is simple: run by agronomists, extensionists and scientists, the 'plant doctors' are trained to ask the right questions and keep records. The plant health clinic stimulates two-way learning. Farmers bring in 'sick' plants, share their experiences and receive a recommendation based on available information and options. Farmers and plant doctors learn more about the cause of the problem and what to do about it. The data collected by clinics help to understand farmers' knowledge and their major needs in specific contexts. This 'fine-grained' knowledge is of great benefit when developing extension messages and writing fact sheets. To reduce transaction costs for farmers, these clinics are run in public places, often close to local markets, true to the spirit of Going Public.

Radio

Since the mid-1990s, entertainment-education has been applied to address pesticide misuse by Vietnamese rice farmers (Heong *et al*., 2008). By 2007, their soap opera covered 239 episodes of drama interwoven with agricultural information. Although it has helped farmers to reduce excessive seed, pesticide and fertilizer use, continued advertising campaigns by the agrochemical industry are undermining these project-driven efforts.

In the future, radio may need to explore more interactive formats that also build on the creativity of the vast number of rural radio broadcasters. For instance, farmers' most frequently asked questions in the rural plant clinics could be captured in rural radio programs where the plant doctor is invited as studio guest. Further scaling up can be achieved by linking to infomediaries, such as Farm Radio International, who send out radio script packages to their network of rural radios.

Video

In 2002, we developed four videos on rice seed health with colleagues in Bangladesh. Rural women who had been previously trained on rice seed health provided input in the development of the script and performed as actors in the videos (Van Mele *et al*., 2005). We subsequently compared the efficiency of video with that of farmer-to-farmer extension, using the same trained farmers as trainers. Unexpectedly, it revealed that women learnt more things from meticulously designed videos on technologies, including insect and disease management, than from farmer-to-farmer extension. The more the underlying scientific principles presented in the videos resonated with what farmers knew, the more video became useful as a stand-alone method (Van Mele, 2006).

Experimentation with educational videos in Africa showed they could equally help to gauge demand for technology. Many of our local partners informed us that after having organised village video shows, communities often wanted to know more about basic rice cultivation principles; pest management was often not a key concern.

While FFS and PLAR should focus on learning with farmers, and testing and modifying technologies, video can build on its outcomes and add value. The learning content can be brought in the farmers' own language, illustrated by local adaptations of farm technologies. Well-made videos can trigger agricultural innovations. However, so far, little attention has been paid to processes underpinning the development of appropriate agricultural learning tools.

A new approach: zooming-in zooming-out (ZIZO)

All approaches described above rely on visual and/or audio tools. Most tools can be used flexibly in any farmer education approach. To allow for a potentially greater impact of such tools, zooming-in zooming-out (ZIZO) offers some guidance (Figure 3).

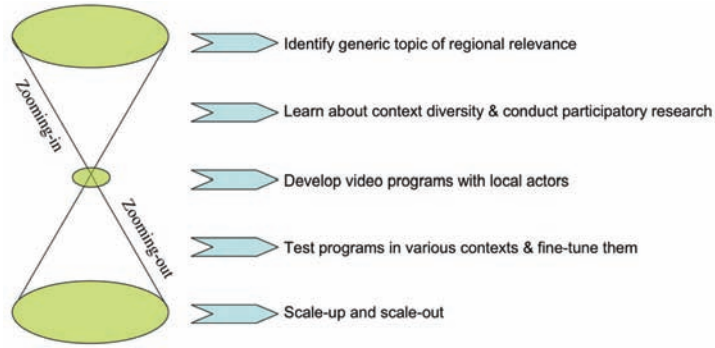

Figure 3: **Zooming-in zooming-out: a new approach for developing farmer-education tools.**

ZIZO starts with the identification of learning needs that are of regional relevance. Only then are communities approached for a better feel about their ideas, knowledge, and related innovations. Technologies may also be tested and modified with communities (zooming-in). Building on these experiences, educational tools (videos, radio programs, fact sheets, posters) are produced in collaboration with these communities. When finally testing the draft versions of these tools in other villages and countries (zooming-out), more novelty is identified, and

further adjustments made (VMele, 2006). Farmer-education tools should ideally:

- Deal with issues of national or regional importance;
- Stimulate discussion and negotiation between actors;
- Show functional technologies and their underlying principles;
- Reinforce this with a few well-selected examples of local innovations;
- Invite the viewer to try them out;
- Be attractive for intermediaries to show them to the target audience.

This paper intended to illustrate the particular strengths and weaknesses of various approaches and stimulate reflection as to how to build synergies between them. Pest management in developing countries is complex: while farmers grow a vast array of crops under varying conditions, the availability of user-friendly advice is often lacking. Good approaches and tools are much needed, but are no substitute (and will never be) for operational advisory services.

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