



One-way, two way, which way? Extension workers: from messengers to facilitators

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One-way, two-way, which way?

Extension workers: from messengers to facilitators

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An analysis of the relationship of research and extension in improving sustainable natural resource management practices, based on experiences in northern Thailand and Zimbabwe.

The farmers had struggled for many years. Owing to increasing population pressure, land had become scarce. Consequently, they had to shorten fallow periods, as no suitable forest land was left for conversion to agricultural production. The farmers knew very well that rice yields would decline as a result—and yields had declined dramatically over the most recent years. Not knowing what to do, the farmers organized a village meeting and agreed to approach the agricultural extension officer to ask his advice. The extension officer who frequently paid a visit to the village listened to the farmers and promised to approach the research branch of the agricultural extension unit to explain the farmers' concerns. On contacting the researchers, he learned that the investigation of the problem of decreasing crop productivity had already been initiated. Researchers were in the process of editing the final research report and were confident that they had developed the appropriate technology for introducing sustainable farming practices. Before the start of the next growing season, the extension worker was able to return to the

village with an innovative package, soil and water conservation technologies consisting of agroforestry components. The farmers were very grateful and immediately implemented the researchers' recommendations. They eagerly adopted the innovative technology offered. As a result of the timely research efforts and the efficient and effective communication, rice yields stabilized and even increased in only three years.

What used to be the farmers' biggest problem had been solved by research and extension. In fact the agroforestry technology developed killed two birds with one stone. Not only did it contribute to stabilizing soil productivity, it also provided additional benefits such as fodder for livestock and fuelwood. Therefore, it was also appreciated by the Forest Department which had been concerned for many years about the high rate of deforestation and forest

The successful application of soil and water conservation techniques in Pha Charoen, Thailand



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degradation through overgrazing and overcutting for fuelwood.

FROM FAIRY TALE TO REALITY

What may sound like a fairy tale *is* in fact a fairy tale. It is based on the paradigm of the conventional research process and our implicit thinking about the adoption of research results by clients or managers, in this case the small-scale farmer or shifting cultivator. According to conventional wisdom, clients have a problem which can only be solved by analytical researchers. It is the researchers' task to identify and analyse problems and to develop solutions which can be readily transferred from the experiment station to the field. Thus, researchers tell farmers what is best for the farming community and the environment. The link between the researcher and client is the extension worker whose role it is to assist clients in applying technology and to support the adoption process.

In recent years, soil conservation technologies for agricultural lands have received substantial attention as a way of increasing production and thus reducing the pressure to convert additional forest lands. Research and extension have offered farmers agricultural innovations that have been advocated as "sustainable" farming technologies with on-site and off-site benefits. However, adoption rates have been disappointing. The following discussion considers why extension has been less successful in resource conservation activities than one would hope. The focus of the discussion is on the role of extension and the link between research and extension. The first part of the article is based on research conducted in northern Thailand and the second part on experiences in Zimbabwe.

RESEARCH AND THE MESSENGER WITH NO MESSAGES

The literature on land degradation and resource conservation in Thailand is



A close-up view of an "ideal" erosion control application; the grass strips on the contour lines control erosion between the fruit-trees

filled with warnings about the consequences of deforestation; floods, droughts, loss of soil fertility, climatic changes, water quality reduction and sedimentation of reservoirs are referred to in practically every publication (Komkris, 1978; Henderson and Rouysungnern, 1984; Putjaroon and Pongboon, 1987; Sombatpanit *et al.*, 1993; Hundloe, 1994). To limit deforestation, research activities are directed at developing means that enable farmers to abandon "destructive" and "wasteful" shifting cultivation. On-site benefits (e.g. increased land productivity) and off-site benefits (e.g. diminished siltation and flooding) are expected to result from stabilized land-use systems. However, in spite of research, extension, incentives offered and some limited success, the sustainability of projects initiated in

northern Thailand is being questioned (TDRI, 1994). The soil and water conservation activities of the Thai-German Highland Development Programme (TG-HDP) may serve as an example.¹

Within the framework of the TG-HDP, soil and water conservation practices were developed and extended to farmers starting in 1987 with the objective of reducing erosion to acceptable levels, thus enabling more permanent crop cultivation (Salzer, 1987). The practices consisted of contour buffers, alternating grass (*Brachiaria ruziensis*) and later perennial strips (hedgerows of leucaena and pigeon pea) with crops planted parallel to contour lines. During the first four years of project implementation (during which incentives were provided for farmers and extension workers) the number of farmers adopting the promoted technologies increased at a steady rate,

¹The discussion of the TG-HDP involvement in soil and water conservation refers predominantly to the early years of the project activities (1987-1990). Since then, the soil and water conservation component has been replaced by a broader sustainable farming systems approach.

but when the general incentive scheme terminated in 1991, there was an immediate and sustained drop in interest in soil and water conservation technologies (Figure, p. 18). Many of the farmers interviewed by one of the authors in 1990/91 and again in 1994/95 expressed disillusionment with the recommended soil and water conservation practices (Enters, 1995).

When asked why they discontinued using the technologies they had initially adopted, farmers reported that the grass they had been encouraged to plant as an erosion control spread quickly into their fields and required increased labour inputs during the time of the year when labour was already in short supply. Weeding has long been recognized as an important determinant of crop yields in the tropics. The soil and water conservation technologies did not address this issue at all; in fact they exacerbated the weed problem. Therefore, it is not surprising that some villagers were angry about or afraid of the grass. Perhaps the most pertinent summary of the agricultural situation was made by one farmer (Enters, 1992):

“Now there are too many people and the government does not allow us to cut any more trees to make new fields. Life was much easier for the older generation. But grass is certainly not the solution to the problems we are facing.”

Population growth, opium suppression, the restrictions on shifting cultivation and the opening of the highlands to the lowland economy have produced a new set of needs, particularly the need for cash. Villagers were therefore more interested in alternative income-generating activities rather than attempts to improve subsistence production.

The authors argue that the main reasons for the disappointing results are to be found in the fact that the research did not address the right questions, i.e. those of the farmers. Moreover, we would argue

that the extension process (a largely one-way, top-down exercise) aggravated the situation. A number of observations can be made to support this position (with respect to the Thai situation and more generally as well):

- Information on environmental impacts is often confused, and presumed cause-effect relationships are uncritically accepted even in the absence of scientific data. For example, it is common to hear affirmations such as “the diminishing fallow period, declining crop yields, increasing rice deficiency, poverty, soil erosion and deforestation will accelerate and lead to ecological and social disaster in the north, unless changes are made” (Hoey *et al.*, 1987, cited in Hundloe, 1994). Such descriptions, although limited in scientific value, cry out for intervention; they are appealing to researchers, donor agencies and the international community (Enters, 1994), but perhaps not to the beneficiaries who do not perceive themselves to be sitting on top of a virtual time bomb.

- The perceived beneficiaries of research (in this case farmers) are often seen as part of the problem. They are viewed as conservative, reluctant to change and ignorant of the massive degradation that surrounds them. Viewed as helpless agents, their input in problem identification, analysis and solution is not sought. This is particularly the case where rigorous quantitative research is

proposed. As a result, research is supply- instead of demand-driven (Nair, Enters and Payne, 1995).

- Researchers are frequently unaware of the local conditions, diverse circumstances, opportunities and constraints to which farmers respond.

- The researchers' overriding concern is to control runoff and soil erosion and it is assumed that a reduction in soil erosion will automatically result in yield increases. With regard to grain yields, different treatments frequently show – at least for researchers – unexpected results (Table).

- Control plots labelled as “farmers' practices” or “traditional practices” often assume incorrectly that local resource users have fixed, inflexible practices, an assumption that is even more erroneous in the face of productivity declines.

The reader may have observed that the previous discussion hardly referred to extension. This is not an accidental omission because the only role extension workers played in the case described is that of uni-directional messengers carrying messages of technologies from the researchers to the target villages. Thus, messages, which from the perspective of many farmers had a questionable technical value, flowed one way only. In terms of results, fallow periods continue to be shortened and soil and water conservation as such remains a low priority for farmers.

Upland rice grain yields after five different treatments

Treatment	1989	1990	1991	Total of 3 years
Farmers' practice	1 099	486	1 095	2 680
Alley cropping (hedgerows)	1 151	396	1 156	2 703
Grass strip/perennial crop	970	277	676	1 923
Hillside ditches	826	471	856	2 153
Agroforestry	1 133	429	1 452	3 014

Note: Treatments were without fertilizer applications.

Source: Anecksamphant and Boonchee, 1992, Appendix 2.

*Leucaena and pigeon
pea hedgerows were
promoted where grass
strips proved
inappropriate*



FROM MESSENGER TO FACILITATOR

The situation described in the Thai example is not unique. The same principles and dilemmas underlie the general approach to research and extension in many other countries. Many recent case-studies highlight the urgent need for a change in the role and attitudes of researchers and extensionists (Clarke, 1994; Matose and Mukamari, 1993; Hagmann, 1993; Murwira, 1994; Göricke, 1993). In recent years, however, various alternative approaches have been initiated by governmental and non-governmental institutions. In Zimbabwe, for example, pilot activities with new approaches based on active farmer participation in research and extension have shown potential for lowering the barriers to the application of agricultural and forestry research results, increasing adoption rates and, thus, improving natural resource management and food security.

For example, the Conservation Tillage Project is being implemented by the Zimbabwe Department of Agricultural, Technical and Extension Service (AGRITEX), with support from the

German Agency for Technical Cooperation (GTZ). The project started in 1988 with the aim of developing and testing conservation tillage systems. Over the course of the project, the elaboration of the research agenda was increasingly dominated by farmers and, as a result, the activities spread to other topics, including agronomic, biological and mechanical soil and water conservation techniques, agroforestry and other topics perceived as relevant by the farmers. The focus of the project turned strongly from research towards extension.

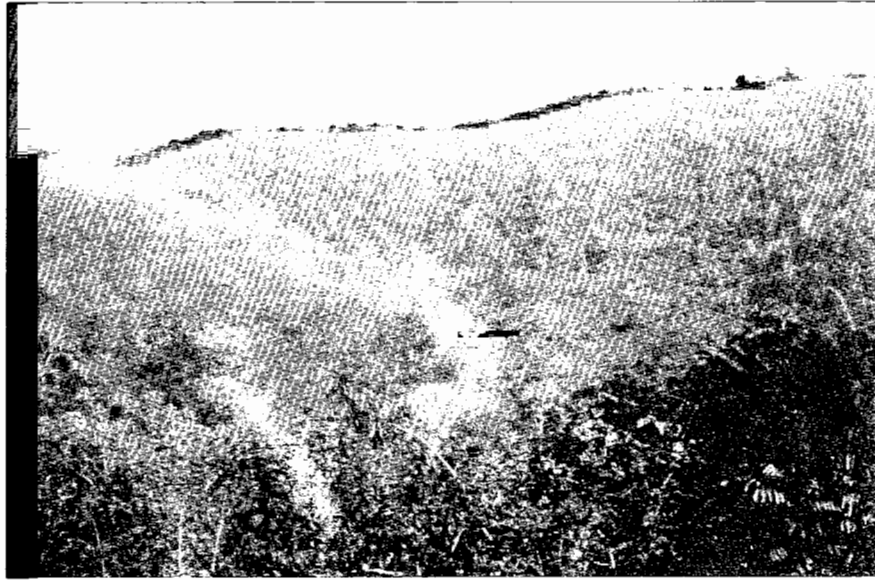
Other participatory approaches being developed in Zimbabwe are community-level planning and development, geared towards community-based resource management and development and implemented by an integrated rural development programme (Göricke, 1993); and the participation extension approach of the ITDG Food Security project (Murwira, 1994). All three projects are located in the semi-arid Masvingo Province. They work closely together and use the same philosophy and similar tools, thereby strengthening the impact and fomenting the

institutionalization of these approaches within the government extension service.

A participatory approach was developed and tested with individual farmers and communities. Incorporated in the approach are shifts in levels of decision-making and the recognition that the roles of the individual actors in conservation strategy development need to be redefined. Development is perceived more broadly and includes skill and socio-organizational development. In addition, incentive strategies are implemented only when needed and are not viewed as an automatic ingredient of every activity and project.

The concept of participatory innovation development and extension

The concept of participatory innovation development and extension is based on dialogue, farmer experimentation and strengthening of the organizational capacities of rural communities. Active farmer participation is the mainstay of the approach. This should not be mistaken for farmer participation in externally initiated activities (e.g. in supply-driven



Grass strips spread into the fields and lead to uncontrolled grazing

research projects); rather it means farmers identify problems themselves and subsequently initiate activities. They may call in support from other relevant actors, for example researchers, if necessary. A major and frequently underestimated result of the approach is an increase in farmer confidence. For the majority of the farmers, this is a precondition for becoming more innovative and organizing themselves better for more effective natural resource conservation and development.

Stimulation of farmer experimentation proves to be a useful element in combining new techniques with appropriate traditional technologies. It increases the ability to assess options and to develop alternatives appropriate for specific ecological, economic and socio-cultural environments. Ultimately, the aim is to transform a technology-oriented research and extension approach into an output-oriented system leading to sustainable resource use.

Leadership training and facilitating dialogue and communication in village workshops are elements which have shown great potential for improving

cooperation between all involved in natural resource management, the sharing of knowledge and the participation of all gender and age groups in extension and rural development. Not to be underestimated is also the positive effect of strengthening local institutions and building up confidence in farmer-to-farmer extension.

Philosophy and tools

The experiences and observations from Zimbabwe, particularly regarding leadership and cooperation, indicate that making headway in natural resource conservation requires a philosophical framework for the participatory development process that includes but goes beyond the adoption of participatory rapid appraisal (PRA) tools. This approach was introduced in the form of training for transformation (TFT) (Hope and Timmel, 1984), a training programme based on Freire's work (1973) and further developed by a local non-governmental organization. TFT is based on raising awareness through participatory, dialogue-based education and it aims at empowering local people for self-reliant development. To implement its

principles in meetings and workshops it offers a range of tools such as codes, role plays and poems. Elements of TFT are complemented by PRAs, diagnostic surveys and goal-oriented planning methods.

New role and approach of extension workers

The traditional role of extension workers was clear-cut and straightforward. As messengers they provided the link between research and the client. Many perceived themselves to be in a teacher/student or, worse, in a teacher/child relationship. A participatory approach needs more than a messenger or a teacher. That the conventional one-way flow of information in many ways explains the poor performance of agricultural and forestry projects is an accepted fact. But is it sufficient to replace it with a two-way flow in which the teachers have an additional group of students, i.e. the researchers, whom they inform why the meticulously designed technologies are of no interest to the beneficiaries? We would argue that the key to finding real solutions (not answers to problems

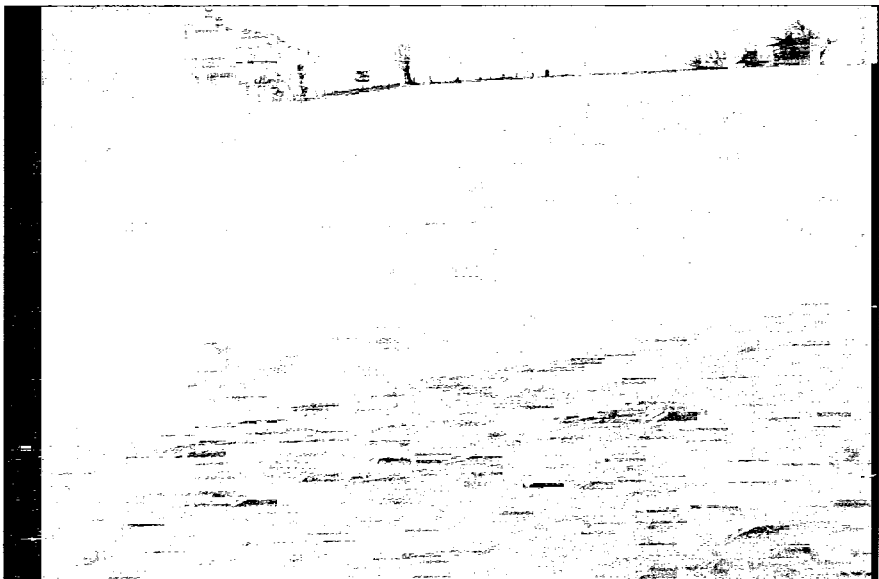
perceived only by outsiders) and developing successful innovations (not a standard technical package) is a participatory process that focuses on local institutional strengthening, the identification of the needs and prioritization. Messengers or teachers, therefore, are not sufficient; initiating, supporting and maintaining a process of change requires facilitators.

The new extension workers' or facilitators' role is to provide farmers with background knowledge and technological options to stimulate discussions and encourage farmers to experiment with options and ideas. Extension must promote the sharing of experiences among farmers and also between farmers and other actors concerned with natural resource and rural development (e.g. researchers, policy-makers). In this way extension agents are not messengers themselves but they facilitate the flow of messages. They improve communication among the social actors of the development interface by strengthening local institutions. Over time the facilitators' role will be redefined and/or gradually taken over by community leaders.

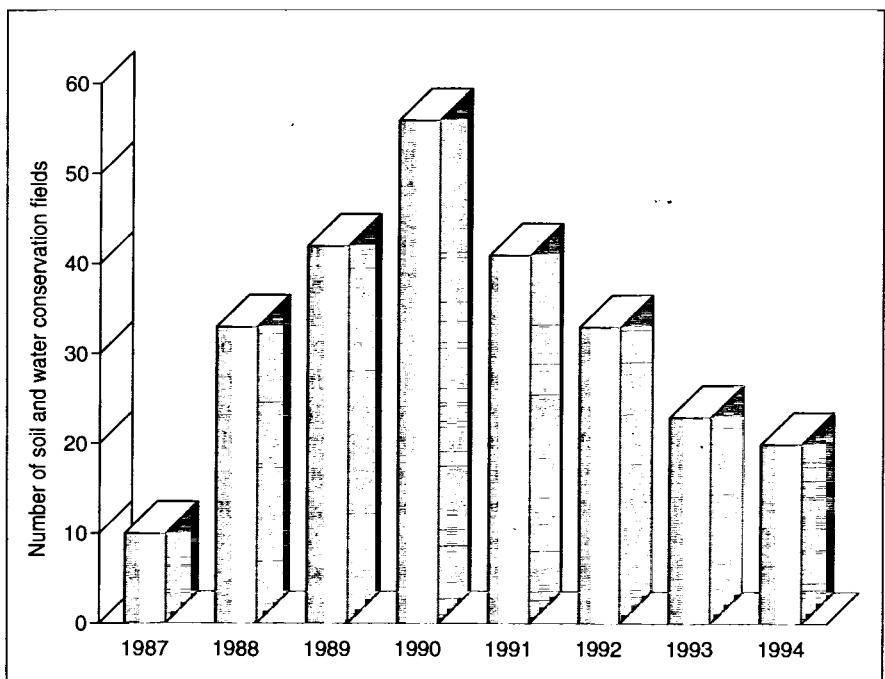
CONCLUSION

At this point, the discussion has come full circle. As noted at the beginning of the article, according to conventional wisdom it is the researchers' task to identify and analyse problems and to develop solutions which can be transferred to the potential user through extension.

In their new role, extension workers analyse problems with farmers and identify areas which require further research and input from technical specialists. A research agenda is drawn up on the basis of the farmers' problems and oriented towards appropriate solutions. Perhaps most crucial is



An isolated hedgerow left by local farmers



The number of soil and water conservation fields maintained by 85 households in five villages in Mae Hong Son Province, Thailand, between 1987 and 1994

Barriers to the application of forestry research results

Over the past decade investment in forestry and agroforestry research has substantially increased, bringing with it a steady flow of research results. But these results have rarely been translated into perceptible changes in the management of forests and trees. From 24 to 28 October 1994, 47 international participants attended a workshop (organized by IUFRO/FORSPA/CIFOR and FAO/RAPA) in Bangkok, Thailand, entitled Barriers to the Application of Forestry Research Results.

Presentations and discussions dealt with a wide range of issues such as the motivation for undertaking research, the research process itself, the communication mechanisms between researchers and potential users and the problems encountered by different user groups in applying research findings. Even though perceptions of the magnitude and importance of individual barriers varied, a consensus on problems in the research design stages emerged.

Research is initiated and primarily driven by the interests of researchers and funding agencies rather than by the needs of

prospective clients and users of research results. The supply-driven mode is particularly prominent in public sector research. In the client-driven private sector, barriers to the application of research results are significantly lower. During the workshop, supply-driven research, often attributable to a paternalistic approach to problem selection and definition which neglects the demands and needs of users, received considerable criticism. It was agreed that new strategies should be developed to identify researchable issues, set research agendas, allocate financial resources and, particularly, enable potential clients to make their voices and concerns heard.

The workshop report, by C.T.S. Nair (FORSPA), T. Enters (CIFOR) and B. Payne (IUFRO), is available as CIFOR Occasional Paper No. 5 (see Nair, Enters and Payne, 1995).

recognition that farmers, extension workers and researchers each have unique areas of expertise which together, and only together, can provide the optimum response. One of the implications of this approach is that a much larger proportion of future research activities will need to be carried out at the on-farm level, facilitated by extension. This does not mean that there will be no place for formal research under strictly controlled conditions, but rather that this research must be linked to practical realities and needs.

The examples of Thailand and Zimbabwe used in this article are perhaps extremes, used deliberately to make a

point. The first case focuses on experiences of the late 1980s whereas the second illustrates new directions taken in the early 1990s. Today in Thailand, the approach taken in soil and water conservation has also been modified, and researchers, extension workers and farmers have moved closer together to solve some of the problems jointly. The Figure (p. 18) indicates that there is still a long way to go.

The second case highlights the fact that going new ways can be rewarding. Where farmers actively participate in research, adoption rates are increasing. Even more significantly, farmers have started to organize themselves and to set research

agendas and targets. As a result, in some areas 80 percent of the farming households carry out soil and water conservation activities without receiving any incentives, and the knowledge about innovative techniques is spreading from farmer to farmer without the need for an external messenger.

These achievements illustrate that what is needed is a process in which research and extension are closely linked and in which beneficiaries become equal partners in research, dissemination and adoption. This requires a reorientation of research itself as well as a new role for extension workers. This will be a slow and long-term process which must be supported by intensive training and follow-up activities. A change in attitude and behaviour is the key determinant for the success of any new approach. It is often difficult for formally educated research and extension staff to accept farmers, with their traditional and experience-based knowledge systems, as equal partners and to learn from them. But, without this acceptance, extension workers will only be able to fulfil the role of messenger which, as we have shown, is inadequate to bring about positive and sustainable change.

Resource conservation problems in most cases require more than just "superior" technologies or "improved" practices. Therefore, a facilitator is needed who can provide assistance on technical issues as well as direct social processes. This includes assistance in breaking down discouraging hierarchical structures; building up the confidence of participating farmers; and recognizing and supporting farmer-to-farmer extension.

In this way, extension is more than communicating information. It is constant interaction with the basic ingredients of identifying and analysing problems, sharing knowledge, developing solutions, disseminating results and initiating actions. ♦



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