Building forest users’ capacity to develop silvicultural practices

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Bangkok, Thailand, June 2001

Abstract

Forests cover a considerable part of the land in Southeast Asia. Therefore, it may be assumed that sustainable forest use could substantially contribute to sustainable land use in the region.

The paper presents an innovative approach tested in Nepal and Vietnam to the development of participatory silvicultural practices within community-based forest resource management regimes, and elaborates on the Farmers’ Forest Management School approach developed by the Regional Community Forestry Training Center to build the capacity of local communities to actively manage forest resources.

Government-centered forest management with its focus on producing sufficient timber to fulfil government revenue targets has to some extent fallen out of favor in the region and there is now a widespread recognition that forests can no longer be managed for timber only and that substantial areas of forest resources need to be managed by local communities to fulfil their livelihood needs, and protect biodiversity and other cultural values. Forest departments play an important role in resource management and the mandate, skill and attitude of forestry officers contribute to the impact that service providers may have in supporting community knowledge and welfare development.

Participatory silvicultural research could have great potential for the sustainable use and management of forests in Southeast Asia under conditions where communities’ rights and responsibilities in relation to forest resources have been articulated and are respected, and were local users’ livelihood needs are given priority over broad national interests.

The paper explains the need for good facilitation in any participatory research and outlines the roles of the facilitator and farmers in the Farmers’ Forest Management School approach. A number of field experiences are provided to the reader to ground the methodology in real-life situations. A discussion session focussing on the main potentials and challenges of the Farmers’ Forest Management School approach concludes the presentation.

Introduction

Community Forestry¹ is most accurately and usefully understood as an umbrella term denoting a wide range of activities which link rural people with forests, trees, and the products and benefits to be derived from them. Community forestry may therefore be considered as one dimension of forestry, agriculture, rural energy and other components of rural development rather than as a separate discipline.

The sustainable management of forest resources plays an important role in sustainable land use, poverty reduction, and food security. Food security depends on the sustainable management of fish, forests, and
wildlife and in many indigenous communities these resources are the principal sources of protein in their diets. Therefore, promoting the sustainable production and use of the food, fodder, fuel and other products derived from forests will enhance food security. Such action will also result in rural income and employment security. This in turn will have the effect of increasing the value of the forests in the eyes of those who benefit from them, thereby creating a positive response to a policy of sustainable forest management.

Opportunities to participate in decentralized resource management, a willingness to respect and incorporate traditional knowledge into resource management plans, ensuring communities’ access to technological innovations and/or opportunities for them to develop forest management practices and technologies based on their own felt needs are important factors that contribute to communities’ sustainable livelihoods.

Community forestry programs are based on a recognition of the dependence of local people on their resources and of their interest in managing them. Moreover, shifts in national economic structure associated with economic development tend to promote greater decentralization of forest (and other resources) management thus creating conditions which allow local communities and the private sector to increase their influence in forest management decision-making\(^2\). In response, governments are shifting towards more participatory forest management strategies, and this has implications for how forestry extension programs and research are planned and implemented.

During the past 15 years attention has been paid to the social and institutional aspects of the community forestry development process and it is believed that more effective community forestry may very much depend on appropriate silvicultural systems and practices designed to improve forest productivity to meet local needs.

Silviculture is defined essentially as the manipulation of forest vegetation to enhance the productivity of one or more forest products. Silvicultural systems are developed through consideration of ecological relationships and refined through repeated experimentation, monitoring, and readjustments.

In general, little progress has been made in developing new silvicultural technologies and practices to enable the natural forest to better meet villagers’ many needs for different forest products, food security, and services. Limited research has, however, been carried out to develop simple, ready available and cost effective silvicultural techniques to assist forest users in managing their forests. Villagers themselves are now asking for assistance in developing more productive forests, but foresters have had difficulties in supplying the technical information they need (Donovan 1998).

The Farmers’ Forest Management School (FFMS) is being developed by the Regional Community Forestry Training Center\(^3\) (RECOFTC) to respond to farmers’ identified need and interest to learn more about forest management practices. It can also create an opportunity for joint learning between rangers and communities and lead to the generation of new silvicultural knowledge to respond to local needs. The FFMS approach has been developed and tested in close collaboration with a number of community/social forestry projects in Vietnam and Nepal\(^4\).

Participatory research in forestry will be essential to achieving the sustainable food productivity increases upon which the short- and long-term food security of a growing world population will depend, and clear management agreements and an effective local institution to manage commonly owned forest resources are seen as prerequisites. Participatory research efforts should clearly focus on the creation of more environmentally sustainable forestry and should be securely based on equitable and gender sensitive food production systems.

**Why the development of new silvicultural practices has progressed slowly**

**History**

The roots of many of the present problems in community forestry in Asia lie in the history of forestry development. Most silvicultural system and practices in use in Asia today were developed in the early part of this century, if not before, and focus on the production of exportable timber (Brun 1912, Van Goor 1982, Dawkins and Philips 1998). During the colonial period timber was an important strategic commodity as wooden ships formed the backbone of both military and commercial power.

Apart from timber, a variety of new products discovered in the tropics were examined for their commercial potential. Local trade items, such as cloves, sandalwood, nutmeg, aloeswood, and many medicinal plants became important commercial products and the source of much competition between the different European
companies. Botanical collection and research focused on those species yielding crops with high export value rather than plants important in domestic commerce or highly valued by local people.

After World War II, most colonies were able to secure their independence. In the forestry sector, technical and financial aid essentially focussed on two aspects: the establishment of a forest based industry as part of and industrial development strategy and the organization of forest management to serve the raw material needs of the new industries (Donovan 1998).

During the past forty years governments have focussed their development and research efforts on the populated, rich and fertile lowland areas greatly limiting the development of suitable silvicultural practices in upland and mountain areas. Little support was provided to forestry research. Local communities and the wealth of local knowledge in forest management were seen as irrelevant to national production priorities.

**Needs and perceptions**

Silvicultural practices, to address farmers’ needs within community based resource management, have not been satisfactorily addressed by foresters, scientist and community forestry practitioners.

Professionals from forest departments and training institutes have tended to reflect the values of the national forest bureaucracy and its preferred administrative methods of command and control. Attention was (and is) mostly paid to forest protection, timber production to supply industry, and to high value and exportable forest products to generate income for government expenditure.

Forester training is mainly based on conventional forestry practices. Foresters are still thinking in the conventional mode and attempting to adapt/refine forestry practices that were developed for timber and other specific products, but inventory methods and various practices to “manage” multi-use, multi-purpose systems have not been included in educational curricula. Few efforts have gone into developing appropriate silvicultural systems to meet community needs and thus foresters have not been given a range of tools and skills to work with villagers. As no more “new” lowland is available for development the focus has shifted to rainfed areas, including hill and mountain systems, whose productivity can be increased, thus enabling them to provide better income and food security to the increasing number of people depending on them.

However, this has not always led to support for the development of ethnic minorities and hill tribes as the dominant social groups which make up the government bureaucracy in many countries in the region still have entrenched cultural prejudices against various ethnic minorities, many of whom live in forested areas.

**Researchers and academics** have been disappointed with how little has been documented in terms of research on working with farmers and communities. Both RRA and PRA have progressed greatly in the last 20 years with a range of tools and techniques developed to work with farmers. However, while tools and techniques have been developed to assist researchers learn, there has been very little documentation on what they have learnt and on how these research topics have supported or assisted farmers and communities to better manage their forest areas. The prevailing research paradigm is still predicated on the belief that the researcher has knowledge and that the farmers or communities are there to receive it.

Many researchers also feel that extension and research methods for community forestry are quite new and hard to work with in light of the fact that in most Asian countries most active forms of forest management are illegal. In this respect it is much easier to conduct research on agricultural land where rights and ownership are well defined. Thus researchers and projects are focussing on forest protection activities and on activities that weaken communities off forest use, rather than on actual forest management. This is particularly evident in Southeast Asia.

**Community forest practitioners and communities** have tended to feel that it was more important to first assure local communities’ access and control over forest resources (Victor 1998). There is a consensus that the degradation of forest resources is most likely to happen where there is no effective forest governance regime and therefore no regulations controlling how and by whom the resources will be used and managed (such as: who is allowed to harvest forest products, how conflicts are to be resolved, who is obliged to contribute).

The potential for self-governance by major forest users has been under-exploited for a variety of reasons, and its potential has only been seriously considered during the last decade or so by a number of pilot projects in Cambodia, Vietnam, Lao, Thailland, SW China, and Indonesia. These projects, in addition to the national initiatives in Nepal, India and the Philippines, have demonstrated that the approaches to be pursued to promote sustainable forest management agreements are based on clearly defined boundaries in terms of group membership and resources, congruence between distribution of returns and costs of maintenance,
collective choice arrangements, monitoring, conflict resolution mechanisms, and nested enterprises (Veer 2001).

So far, communities undertaking the process of “negotiation” within and amongst communities and with the government need to be able to show that they can protect the forest area, rather than manage it.

Moreover, the technologies brought to community forestry programs have been more suited to the needs of industry, mainly based on prescriptions for plantations of local or exotic species, and natural forest management. Local level forestry officers and wealthy and influential villagers may greatly influence how the forest resources are used and who will benefit. Very often preference is given to a single product such as timber.

Lack of a participatory research methodology

To date foresters and researchers have not fully recognized the true role of farmers as de facto foresters, and have failed to make the farmers full partners in forest management and development exploring and exploiting the existing wealth of knowledge and experience in forest-based communities. Farmers' indigenous technical knowledge has often been marginalized in community forestry.

Forest officials often reject the idea that the local people have the ability or knowledge to undertake technical or administrative forest management activities to improve, or even sustain, forest productivity (Banerjee 1999).

Different approaches to silvicultural system development are used and they depend very much on researchers' backgrounds and priorities. Some focus on forest ecology, others on people's livelihoods. Some base their research on mono-products and then combine many mono-products to make up the whole system, while others adopt a "binary" approach such as artificial vs. natural regeneration, natural forest vs. forests on farms. Few focus on multi-product, multi-layer, multi-purpose forest management systems. Some action research has also been conducted and tends to involve local communities the most. However, whether farmers have valuable knowledge which can play an important role in forest management or have a paramount need to be guided is still endlessly debated.

Why participatory development of silvicultural practices?

Over the past decades evidence indicates that local people have been manipulating the natural forest for many years, often applying silvicultural practices they have developed themselves. Increasingly it is being recognized that farmers' knowledge is sophisticated, systematic, and comparable with scientific counterpart (Warner 1991). Despite repeated calls for greater use of such knowledge, cultural beliefs and values in developing innovative systems of resource management, the forestry profession has been slow to adopt these methods (Shepherd 1992; Barrance 1995).

Increasingly, local people are reaffirming not only their interest but also their rights to be involved in developing new technologies through research. Indeed farmers are speaking out to preserve, and where necessary rehabilitate, the native forest rather that establish plantation of exotic species.

Conventional forest management practices are not always useful or practical within the community forestry context. Conventional "scientific" forest management has tended to emphasize the management of trees populations for the production of timber (often mono-culture plantations) or other industrial tree products such as pulp, oils and resins. In community forestry communities' objectives tend to involve a wider range of products and values, and management practices should reflect these.

Food production and rural development, particularly in those countries without stable food security, require appropriate and up-to-date technologies which, while conforming to sustainable development criteria and local food traditions, promote the modernization of local production methods and facilitate the development of innovations.

Several governments and forest departments more open to communities' active involvement in the management of community based resource management, such as those that have promoted Joint Forest Management, Community Forestry, Joint Management of Protected areas, Collaborative Forest Management, have started to develop a number of approaches to develop new silvicultural techniques, based on local users needs and values.
Considering the great variety of "local forest environments" that today exist, the different users’ perceptions of forest resources uses and values, the distances and isolation that often characterize such socio-cultural environments, the capacity of local communities to address their forest production needs (mainly food security and household economy related needs), a search for innovative silvicultural practices and solutions to address such needs should be given a high priority in the region.

Establishing sustainable and diverse patterns of forest production should take into account the present and future needs of the people as well as the potential and limitations of the natural resources. Research needs to look at local conditions rather than make broad generalizations at the national or regional level, and should use a simple language (head-loads, and hand-full) rather than a technical language which alienates local people.

Farmers have superior knowledge of local sub-types of forest which affects the ecological systems, animal migrations, etc. Without local participation in planning, conducting and evaluating research activities, conventional research approaches will very rarely be able to address real-life needs of forest-based communities.

An innovative approach to integrate local knowledge and modern science

**Purpose of the Farmers’ Forest Management School (FFMS)**

The Farmers’ Forest Management School (FFMS) is being developed by the Regional Community Forestry Training Center (RECOFTC) and a number of Community Forestry field projects and institutions in Nepal and Vietnam to respond to farmers’ identified needs and interest in learning more about forest management practices, and to create an opportunity for joint learning between rangers and communities to generate new silvicultural knowledge to respond to local needs.

The approach aims to build farmers’ capacity to analyze their livelihood system, to identify their present and future forest production needs, share knowledge and generate ideas on potential forest management practices to address selected needs. Potential silvicultural practices are then selected for experimentation on farmers’ forests, eventually enabling farmers to identify and adopt the practices that will solve their felt forest production needs. The proposed learning process gives forest users the opportunity to learn by doing, by being involved in experimentation and discussion, to develop their ability to make critical and informed decisions that render their forests more productive, profitable and sustainable.

The purpose is also to assist forest users to organize themselves and their communities, and to create a strong working network with other groups, forest officers and researchers. In doing so the role of farmers in the researcher - extensionist - farmer chain will be strengthened. Through utilizing the skills developed in local analysis forest users are also enabled to adjust input recommendations or technical packages to suit local conditions.

**Learning approach adopted**

Farmers’ learning is directed by the need to find solutions to real-life problems. The learning process has been designed to create suitable conditions for forest users to become fully involved in identifying what to learn, to participate in an innovative learning experience, to observe and reflect on that experience from many perspectives, and to create concepts and use theories and newly acquired skills to make decisions and solve problems.

The Farmers’ Forest Management School uses “non-formal adult education” methods, based on experiential learning techniques, and participatory training and group decision-making methods. Adults come to any new experience knowing a great deal, and they learn best by building upon their own experiences. They learn more by doing than by listening, and they learn best when they are engaged and assisted. Adult learning theory stresses that adults need opportunities to experience, reflect, discover, and apply (Renner 1993).

**The forest as classroom**

Typically a group of 20 to 25 selected members of a forest-based community meets regularly for half-day over a period of 12-24 months (or more) on one of the community selected forest areas. All learning is based in the forest. Farmers identify and experiment with different forest management practices and practice new skills. Through direct observation of experimental plots data are collected and decisions made based on analyses of
Facilitation and the role of the facilitator

Facilitation can be best described as a conscious process of assisting a group - functioning as a group - to successfully achieve its defined task. In order to facilitate, it is necessary to understand group dynamics and the team learning process (Braakman, 1999).

The Farmer’s Forest Management School (FFMS) is facilitated by a field officer, or group leader trained in adult education principles, facilitation skills, participatory training and group decision-making methods, has an understanding of the social dynamics of forest practices development, and should have implemented a forest management school at least once as part of her or his training.

The evidence for learning is change - changes in behavior, knowledge, understanding, skills, interests, values, awareness, or attitudes. Therefore, the facilitator’s job in the FFMS is to structure learning opportunities and encourage learning rather than deliver information, offer explanations or provide answers. Facilitators initiate discussion and then draw in the farmers; they amplify some comments and summarize others; they compare and connect remarks and point out opposing views; the facilitators guide the process, but not the outcome.

The role of scientists and other technical resource persons

It is recognized that a facilitator may not have all the technical knowledge and skills required to cover the full range of forest management issues which the group may express an interest in. Therefore, s/he will identify and mobilize the appropriate resources, such as forestry staff, knowledgeable farmers, specialists, and visits to nearby villages, so as to timely provide farmers with the required information and skills, and to make sure that the school curriculum meets farmers’ expressed interests. Multidisciplinary teams including locally available expertise (knowledgeable farmers) are particularly appropriate in the school process. They provide backstopping, support, knowledge on a specific topic, opportunities for technology blending, and opportunities for researchers to learn to work with farmers.

Steps in the FFMS learning process

Selection of community & the FFMS group members

Due to the complexity of factors that influence the management of a community forest, and especially noting that the learning process required to identify and test alternative forest management practices will take at least one year, it is very important to ensure full commitment from the group for the full period. The best time to propose to the community that a FFMS should be considered is when a community forest management plan has been prepared and implemented and appropriate village institutions have been established.

The main objectives of this first step are to identify communities or user groups ready and interested to learn more about forest management practices, to assist the users to select a smaller group of members (20 to 25) that will form the FFMS group, to clarify the links and flow of information between the whole community and the smaller FFMS group. The mandate for action also needs to be worked out at this stage.

Getting the group settled

Adults learn best in an atmosphere of respect and support, and when a group of farmers first meet they are usually full of questions. Who is involved? What is going to happen? Where do I fit in? In addition, farmers will most likely not be used to the participatory training methodology. The main objective of this step, then, is to help the group to get settled in, create a sense of welcome, and establish an atmosphere of co-operation and sharing, thus increasing their self confidence, and enabling a free exchange of information.

Identifying forest production needs and selecting the forest area

Farmers’ learning is directed by the need to find solutions to real-life problems. Consequently forest users will be interested to learn more about forest management and alternative forest practices only if they address their identified needs.

The main objectives of this step are for the FFMS group members to examine and analyze their overall situation in relation to how the forest is used now and its links with their present livelihood systems. Changes over time also need to be discussed to help farmers link the role of forest management practices with forest
use and conditions in order to extract implications for the future in terms of needs and forest management practices. In addition, the group identifies the forest area that they think will be most appropriate to be used to test alternative management practices.

Selection of forest management practices

Once the Farmers’ Forest Management School (FFMS) learning group members have selected their forest production need and learning interests, they will generate ideas on possible management practices/silviculture techniques, to address the selected needs.

The main objectives of this step are to generate ideas on possible site-specific, low-input, readily-available management practices, and to select the ones most suitable (and that are in accordance with existing forest laws) to address the identified needs. These forest management practices will form the base from which the group will select the field experiments that they conduct in their own forest.

Planning the field experimentation & plot design

During the season the FFMS group will conduct field experiments to study alternative forest management practices or technologies. These season-long experiments need to be planned carefully.

In general, the interaction between farmers, researchers and extensionists is based on top-down communication. One of the consequences of this is farmers’ dependency, which manifests itself as a lack of confidence in their own abilities to experiment. The main objectives of this step, therefore, are to strengthen forest users’ confidence in this respect so they will feel free to experiment, and to assist the group to plan in detail the field experiments. In addition, at the end of this session an overall school programme will be prepared.

Preparing to observe changes in the experimental plots

Since changes may occur at any time during the season in the forest experimental plots, regular observations of selected indicators will allow users to follow the performance of the practices under experimentation. This will enable them to make informed decisions on management practices, and on corrective measures that might be necessary.

The main objectives of this step are to build users’ confidence in monitoring and to assist the group to identify what, when and how to observe changes in their field experiments (monitoring).

Establishment of experimental plots & conducting regular meetings

At this stage of the school the farmers will have established a number of season-long experiments, and an overall school programme will have been prepared. During the season the school continues with half-day meetings, which are organized on a regular basis for a total of about 6 to 8 meetings.

The real value of skills training, and the justification for most adult-education efforts, lie in real-life application. The purpose of the regular meetings is to provide participating farmers with the opportunity to observe changes taking place in their experimental plots and to reflect on their field observations for one or more seasons. Field experimentation, reflection and analysis by individuals with the support of group feedback provide farmers with opportunities to acquire new skills.

Self-evaluation & re-planning

At the end of the season the group undertakes a participatory evaluation to measure changes in knowledge and field skills between the beginning and the end of the process. Farmers will have the opportunity to finalize their analysis of the results of the field experiments, to judge differences between experiments, to make results available to all forest users or the complete community and to other communities as well. According to the group interest and priorities a re-planning exercise could then be conducted to continue with the present experimentation or to explore new issues and looking for answers to new questions.

Cases from the field
**Nepal, Makwanpur district**

The Hills Leasehold Forestry and Forage Development Groups in Makwanpur initiated their Farmers’ Forest Management School (FFMS) process in mid 2000. The group had already successfully established the production of fodder grasses on their forest land. Fodder grasses are used to feed livestock (producing meat and milk from goats and buffaloes) and to produce seeds which are sold at an attractive price in the market. The income of the group has steadily increased over the past 5 years. The two Leasehold groups have seven and five members respectively. Each member has about one hectare of land with a 25 years lease, and an operational plan.

The group clearly identified generating income from fuelwood production (mainly for the market but also for their own consumption) as the need to be addressed. As they each had a 25 years lease and they wanted to maximize their income within that period, their interest was in finding out/learning more about how to increase the forest's fuelwood productivity.

The group looked at familiar fuelwood species, within and outside their village, and drew up a list of about 25 species. After inspection they found out that there were seven species available in their own forest. They ranked the seven species according to perceived fuelwood and coppicing capacities (quantity and quality), ending with four potential species to be kept for experimentation.

The FFMS learning group identified the areas where experiments were to be established and finalized five experimental plots plus one as a control. The group did not have previous experience in forest management, and they do not belong to any Forest Users Group. Their knowledge on forest management practices was thus limited.

**Experimental plots**

The size of the five experimental plots is 10x10 m. The reason behind the selection of five plots was for the group to be able to experiment with practices under different "local conditions" and according to the availability of species in different locations within their forest area.

Experiments will provide some results after one year but the group and facilitators feel that at least two years or more of observations will be necessary. The objective of the experimentation is to learn which of the four selected firewood species are the fastest growing and can produce the largest amount of fuelwood in the shortest period of time, which species have stronger coppicing capacity, and the appropriate spacing between trees. Silvicultural practices tested in the experimental plots are as follows:

- Selection of potential locally available fuelwood species;
- selection of two or three species in each plot according to availability. (Different combinations in each plot). One of the reasons for this is that experimenting with only one species in one plot leaves an excessively large gap between trees that the farmers find undesirable and which is contrary to the operational plan;
- thinning the natural regeneration with a spacing regime of about 2x3 m. Criteria for thinning is to remove trees of undesired species, as well as those that are diseased, the most bent, or with no top, and to keep the existing spacing regime;
- promotion of coppicing from the stumps of the trees removed/thinned;
- removal of new sprouts at 6 months. Only 3 or 4 new sprouts will be kept from each stump. The removed biomass is used for different purposes such as fodder or as animal bedding, according to species.

**Observing changes and record keeping**

Farmers regularly observe changes taking place in the experimental plots and the analysis is mainly done by visual appreciation, perception and using local measurements. Record keeping using measurement tape is more difficult and not easily understood by everyone. This is also due to the high illiteracy level of the group. At present measurement and records kept are as follows:

- Diameter and height of each tree left standing (by hand size and measuring tape);
- number, size and length (by finger, arm) of new sprouts/coppice at 6 months;
- amount/weight of biomass produced at 6 months by coppicing (by back-load);
- fuelwood harvested (by back-load).

**Nepal, Kavre district,**
The Sarda Debi (Goddess of Wisdom) Forest User Group⁸ in Kavre district is composed of 150 households managing 42 ha of forest land. They started their FFMS on March 2000. They are looking at ways to improve forest fuelwood productivity through different coppicing techniques and species selection.

Experimental plots

The FFMS learning group established the plots on 3rd April 2000 and carried out the first measurement during July 2000. A signboard depicting/explaining the experiments has been displayed on the nearby trail. Differences in tree development between plots and amongst species are now clearly visible. The silvicultural practices tested are:

- First plot: Cutting all the trees (on average fuelwood tree species with diameter of about 10 to 15 cm) leaving stumps for shoot regeneration. Four species were selected all other were removed. There was an initial concern about exposing the soil and creating erosion, but the regeneration was very fast and no erosion was observed;
- second plot: Thinning, and coppicing. Four species were selected;
- control plot: No practices were applied.

Observing changes and record keeping

Observations are made and recorded at 3 months intervals considering stump height and diameter (for each of the four varieties); number of shoots and size for each species; distance between stumps.

Labels are used to indicate the first longest shoot measured so as to identify it during the second measurement and to see changes. It has been observed that often the first longest shoot does not remain the longest after 3 months. Records are kept on the group book. When results will be finalized the Forest Users Group (FUG) plan to use the selected practices on a plot in each of the five forest blocks.

Sharing results

The group members have become more confident and feel they can continue experimentation without the facilitator because they know the process and the observations to be made. Nevertheless, they feel that the support of the facilitators, through probing, will help them to improve reflection and analysis.

As far as sharing with the whole Forest Users Group is concerned they have made a presentation on their activities during a general assembly, they have shared informally with their friends and relatives through local networks, and people walk close to the plots while going into the forest and can observe the activities and results. “Anyone is free to attend/join a group meeting” a woman added. They believe the FUG members are aware of what the group is trying to achieve but do not have detailed knowledge about all the learning that has been accomplished so far.

Nepal, Sindhupalchak district⁹

The Sipapokhare Forest Users Group established a 9 ha community pine forest with the support of a development project about twenty years ago. With the passage of time the group started to realize that the pine forest might no longer satisfy their forest production needs. In addition, the group found that they can not use the pinewood for housing construction because of the termites, but they can instead sell the wood for furniture and various decorative household items.

The group is now looking at ways to convert the pine forest into a broadleaf forest mainly for timber production (Sal species), but also for leaf-litter production (to be used as fertilizer on their agricultural fields), and some fuelwood.

They observed that there is not much regeneration of other tree species in their forest and they want to find out which species will spontaneously regenerate, and in what proportion, after removing the pine trees. In addition, they are looking at what percentage the pine trees should be removed.

Experimental plots

The group recently established three experimental plots (20x10 m. each):
- First plot: Clear felling of pine. Broadleaf species are present and at least about 4 m high;
- second Plot: Felling of 50% of pine trees. Broadleaf species and not well developed yet (less than 4 m high);
- third plot: Control, no silvicultural practices applied.

**Observing changes and record keeping**

With the help of the ranger/facilitator they plan to observe: the number of species that will appear; the number of new seedlings of each species (and then decide which one to keep). They also plan to estimate the amount of leaf-litter generated.

**Vietnam, Yen Chau district**

Na Nga is a Thai ethnic minority village in northern Vietnam consisting of 115 households, and a total population of 527 people. The village has a total land area of 575 ha of which 124 ha consists of natural forest, 64 ha consists of plantation, 142 ha consist of uphill land planted with maize, rice and cassava, 7 ha are under one crop of wet rice, and 7 ha consist of ponds and lakes. The main livelihood of the villagers is based on the production of maize, cassava, mangoes, and fish.

Land Use Planning and Land Allocation (LUP-LA) were carried out in 1998 and land right certificates were issued in 1999. So far 112 land right certificates have been granted to households. Community forestry development activities carried out so far include the preparation of Village Level Forest Protection and Development Regulations, and a plan to protect the community forest.

During the FFMS process the Na Nga villagers identified four broad learning interests:

- Methods to protect the bamboo forest (for poles);
- techniques to produce/ use the bamboo forest;
- techniques to produce a specialized forest. (Selected tree species for specific utilization purposes and the appropriate management technique);
- techniques to take care of the forest for timber production.

The group eventually decided to start exploring/experimenting with techniques to address their bamboo pole production and associated protection needs. With the help of an existing 3 dimensional land use model it was easy for farmers to select the forest area that they believe is the most appropriate to experiment with alternative forest management practices for bamboo production.

**Generation of ideas on bamboo forest management practices**

After the observations and dialogue in the forest the group discussed possible improvements. Farmers pointed out that the forest is managed under a cooperative management agreement and it is not managed well. It is too dense. Some group members said, "We do not cut it the way we should. We do not use the forest according to any management principles, we just cut it." Amongst the ideas generated for improved management were:

- Do not cut the first shoot of the season, it will affect the growth of other shoots and their number and strength will be adversely affected;
- cut the old shoots inside the clump, leaving only one or two to help the new shoot to grow straight;
- remove any bamboo not growing straight, or diseased;
- clear well between clumps;
- cut bamboo branches/pruning up to one and half meters;
- reduce the number of shoots /poles per clump to 6-7;
- assign a group to take care of the experiment;
- locate the plot near the road. It will be easier to protect it from illegal cutting;
- inform the community of the purpose so they do not enter the plot to cut the bamboo.

The silvicultural practices finalized were: Cut old bamboo poles; cut the bent and diseased poles; cut old at 50 cm from the ground; leave the first new season shoot to develop; prune poles up to 1 m from ground; ban the collection of bamboo shoots from the plot.

**Experimental plots**

It was quite easy for farmers to select where the experimental plots should be established. The area for
experimentation will be about 3 Sao = 1,000 m² (or 30X30 m) with a total of about 17 clumps. A signboard indicating the techniques experimented with will be placed along the path for all to see. The plot was demarcated using a rope provided by farmers and representing a locally commonly used land measurement unit.

Observing changes and record keeping

Six main indicators were selected for regular observations: No. of bamboo shoots; no. of poles; soil moisture (by observation, i.e. by removing leaf litter and then physically inspecting the soil); shape of poles (straight or bent); size of poles (by string measurement); length of poles (by string measurement).

Discussion

From field experience it appears that forest users are interested to search and learn more about how to:

- Increase productivity of existing broadleaf forests for fuelwood, fodder, and leaf-litter, (this includes also the study and selection of species);
- convert existing mono-species forest (such as pine forest 20-25 years old) into broadleaf forest for multi-purpose production (fuelwood, fodder, leaf-litter, timber, and to increase groundwater levels);
- increase income generation through production of Non Timber Forest Products;
- protect and increase water supply for domestic and agricultural use.

The above interests are real-life farmers’ needs and the search for silvicultural practices to address such expressed needs will help local forest-based communities to improve their livelihoods and food security.

As far as the experimentation is concerned it seems there are two levels of monitoring and record keeping being carried out. The first is a “farmers-centered measurement” that is visual, based on farmers’ perceptions, and uses traditional measuring units such as finger size, back-load, and bundle. The second involves observations supported by the “facilitator/ranger”, kept by the group or by the ranger. It includes the use of measuring tape, and the data gathered needs to be first compiled and analyzed before it can be presented and discussed by farmers. As an example some measurements are taken in order to be able to estimate annual volume growth.

Potentials of FFMS

The refinement of community-based forest resources management depends on the development of simple and cost effective silvicultural techniques. The participatory development of such silvicultural practices will assist forest users to become active managers of their forests’ resources according to their perceived needs.

The FFMS methodology aims to build farmers’ capacity to analyze their livelihood system, to identify their present and future forest production needs, share knowledge and generate ideas on potential forest management practices to address selected needs. The FFMS provides opportunities for co-learning, it helps participants to share knowledge, and it has the potential to generate new knowledge for both researchers and farmers that can be directly applied in specific situations/environments.

Building local users’ capacity to identify forest management objectives and priorities based on their needs, promoting low-cost and readily-available sustainable silvicultural techniques, and strengthening farmers confidence in their own capacity to experiment is an investment that will generate long term benefits.

The FFMS addresses farmers’ food security needs and equity issues in the use of forest resources. This is particularly relevant when different interest groups exist within a community and especially were there is a low-income strata whose members are dependent on forest resources for their survival. The search for innovative silvicultural technologies/practices to best manage forest productivity for multi-product and multi-layer forests should begin by responding to the needs of the poorer communities.

The FFMS creates awareness and ownership of the learning process and not only a set of outcomes. Utilization of communities’ local resources, knowledge, skills, and values are sought throughout the process. This helps communities to independently initiate new research activities to find answers to new questions.

The FFMS is a learning process and not a demonstration project designed to transfer technologies developed
by outsiders. Experimentation results are readily understood by farmers, and dissemination occurs through existing rural networks.

The FFMS is a tested and documented methodology that has the potential to assist forestry service providers to support community development and sustainable forestry resource management. Training material has been developed and lessons learnt documented. Replication of the approach is therefore made possible by equipping foresters with new skills, methods, and attitudes to facilitate the participatory development of silvicultural practices based on local needs.

So far the FFMS approach has received much positive feedback from farmers (see Box 1) who have been involved in FFMS trials suggesting that it has the potential for widespread use in the region.

**BOX 1 Feedback from farmers involved in FFMS trials**

"If we do new things we might have better results. Why should we stick to the old ways? We should try something different."

"We thought you (the ranger) would come and tell us what to cut and how but afterwards we have learnt that we can find out by ourselves by answering your questions."

"At the beginning it was a very confusing process but after 3-4 days when we prioritized our own needs it became clearer and we found out that maybe we could meet our own needs through different management practices."

"We thought you were going to talk about forest management when you first came but we talked about everything except forest management! After a struggle we have come to an understanding about the benefits of this way of learning."

"We thought that managing the forest meant to protect it, to leave it to grow in its natural condition, not to touch, cut or harvest it. After the establishment of the experimental plots we have discovered that we can manage the forest not only by leaving it alone but also by cutting it."

"We have many ideas that we would like to try."

**Challenges of FFMS**

Within the community-based forest resource management context, the Farmers’ Forest Management School, as well as other participatory technology development approaches can provide the expected research results as long as users have secure or are confident on their rights over the use of the forest resources.

Forest departments are often divided between defending national interests and meeting the needs of local people and controlling and policing the access to and use of forest resources are in many case important departmental duties.

Extension and research are not amongst the conventional forester’s roles and responsibilities and foresters are often resistant to change. Bringing about changes in a conservative institutional environment is a long-term process. This is both related to government bureaucracy and the forestry research system. Foresters may need be exposed to a different role and given a range of skills, methods and approaches to facilitate active community forest management.

Local people have the knowledge and skills to collectively identify and solve local problems. Community-based research approaches ensure that services providers not only match local needs, but also utilize local skills and knowledge. Experience has shown that extension programs are much more likely to reflect people’s priorities and reach their goals in a sustainable fashion when they are highly influenced by the beneficiaries themselves (World Bank 1999).

Forester training is mainly based on conventional forestry practices, and foresters are still thinking in the conventional mode and attempting to adapt/refine forestry practices that were developed for timber and other specific products. Thus it is no surprise that inventory methods and other practices to “manage” multi-use, multi-purpose systems have not been included in educational curricula.
Within a community there are a number of groups with different interests and different priorities for the use of forest resources. Equal representation of all community stakeholders need to be assured in the FFMS process.

There is a lack of recognition that good facilitation is a crucial element in any participatory approach. Most educational and training interventions still focus on the technical knowledge base of the trainer/teacher and the transmission of that knowledge to the learner.

Many institutions, departments or projects dealing with extension are still technically oriented, and pay little attention to the methodology of developing facilitation skills. Even when this is recognized, it is not easy to educate or train people to become good facilitators. Good curricula are difficult to develop, as a facilitator needs not only a certain attitude, but also a wide variety of skills and on-the-job training; without expert mentoring and good experiences it is very difficult to become an effective facilitator (Braakman 2000).

Experimentation and analysis is a fundamental step in the experiential learning cycle. To increase farmers' capacity in forest management we should be looking to promote a "farmers'-centered measurement" of their experimental plots so as to enable forest users to keep records and evaluate the experimentation by themselves with little or no support from outside. This becomes even more relevant with illiterate farmers.

Conclusions

Forests cover a considerable part of the land in Southeast Asia and it is therefore assumed that sustainable forest use could substantially contribute to sustainable land use in the region.

Most silvicultural system and practices in use in Asia today were developed in the early part of this century, if not before, and focus on the production of exportable timber, and forester training is mainly based on conventional forestry practices. Many researchers also feel that extension and research methods for community forestry are quite new and hard to work with in light of the fact that in most Asian countries participatory forms of forest management are still illegal or permitted following customary rights but with no legal grounding. In this respect it is much easier is to conduct research on agricultural land where rights and ownership are well defined.

The potential for self-governance by major forest users has been under-exploited for a variety of reasons, and its potential has only been seriously addressed during the last decade or so by a number of pilot projects in Cambodia, Vietnam, Lao, Thailand, SW China, and Indonesia. These initiatives indicate that clear forest management agreements between the forest users (villagers) and the de jure forest owner (the government usually represented by forest departments), and effective local institutions are prerequisites for participatory technology (silvicultural practices) development.

Shifts in national economic structures associated with economic growth tend to promote greater decentralization of forest (and other natural resources) management thus creating conditions which allow local communities and the private sector to become more involved in forest management decision-making. It is important that foresters and forestry organizations foresee changes beyond the immediate future and are prepared to adapt to emerging situations by becoming agents of change.

Participatory research in forestry will be essential to achieving the sustainable food productivity increases upon which the short and long term food security of a growing world population will depend. Participatory research efforts should clearly focus on the creation of more environmentally sustainable forestry and equitable and gender sensitive rural livelihood systems.

Establishing sustainable and diverse patterns of forest production should take into account the present and future needs of the people as well as the potential and limitations of natural resources. Researchers should look at local conditions rather than make broad generalizations at the national or regional level, and should use a simple language (head-loads, and hand-full). Farmers have superior knowledge of local sub-types of forest which affect the ecological systems, animal migrations, etc. Without local participation in planning, conducting and evaluating research activities, conventional research approaches will very rarely able to address real-life needs of forest-based communities.

The Farmers' Forest Management School (FFMS) developed by the Regional Community Forestry Training Center (RECOFTC), in cooperation with a number of community/social forestry projects in Nepal and Vietnam, has been designed to respond to farmers' identified needs and interest to learn more about forest management practices. The learning process aims at building forest users' capacity to develop community silvicultural
practices and to create an opportunity for joint learning between rangers and communities to generate new silvicultural knowledge responsive to local needs. The Farmers' Forest Management School uses "non-formal adult education" methods, based on experiential learning techniques, and participatory training and group decision-making methods.

Facilitation as a conscious process of assisting a group - functioning as a group - to successfully achieve its defined task is a key element in the successful adoption of any participatory approach, especially silvicultural practices/technology development. Re-orienting forestry officers and development workers toward a facilitator role will include training in adult education principles, facilitation skills, participatory training and group decision-making methods. The facilitators guide the process, but not the outcome.

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Notes

1 FAO, 1987

2 C.T.S. Nair, FAO UNASILVA, No. 204, Vol. 52

3 The Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC) is a leading international training institution in Southeast Asia. Its mission is to closely collaborate with partners to actively support community forestry. As a learning organization, RECOFTC designs and facilitates learning processes that support the development of capacity of actors in Community forestry. The Center is based in Bangkok, Thailand.

4 Collaborating projects in Vietnam: Social Forestry Development Project (SFDP) Son Da; Mountain Rural Development Program (MRDP); the Social Forestry Support Program (SFSP); Sustainable Management of Resources in the Lower Mekong Basin Project (MRC); Project "Aforestation in Bac Giang, Quang Ninh and Lang Son Provinces" (KFW 3).


5 Cor Veer RECOFTC, 2001, Personal communication

6 The FFMS methodology is based on the successful experience of the Farmer Field School (FFS) approach developed by the FAO Integrated Pest Management Program in rice production in the region. The FFS approach on rice cultivation showed that farmers can become experts at ecosystem analysis and make informed decisions about necessary intervention from both an ecological and an economic point of view.

7 The Nepal-FAO Hills Leasehold Forestry and Forage Development Project operates in ten districts, and it aims to raise the income of families below the poverty line, and contribute to improving the ecological condition of the hills. Project objectives are achieved through leasing blocks of degraded forest to poor households for a period of 25 to 50 years, and providing technical assistance to group institutional and technical development.

8 In Nepal the Forest Users Group (FUG) is the recognised local institution that manages the community forestry land. The Executive Committee and the General Assembly govern the FUG. A Forest Operational Plan is agreed by the FUG and the Forest Department and modified every five years (if required).

9 The Yen Chau district in Son La province is one of the districts assisted by the Social Forestry Development Programme in Son Da. This is a technical co-operation programme between the Vietnam Government and the German Technical Co-operation (GTZ).