

News on the Model Forest Approach



to Sustainable Forest Management

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3rd REGIONAL MODEL FOREST WORKSHOP

The third Regional Model Forest Workshop was held in Pyay, Myanmar from 25-29 November 2001. The workshop, with the theme “*Criteria and Indicators for Sustainable Forest Management in Model Forests*”, was organised and sponsored by the RMFP in collaboration with the Forest Department, Union of Myanmar and Japan International Forestry Promotion and Cooperation Center (JIFPRO). Over 60 people participated in the workshop, including representatives from the four RMFP countries (China, Myanmar, Philippines and Thailand), FAO, Forestry Agency of Japan (FAJ), ITTO, CIFOR, FORSPA, JIFPRO, RECOFTC, Malaysian Timber Certification Council (MTCC), and Kyoto Prefectural University.

Opening addresses were delivered by U Shwe Kyaw, Director General, Forest Department, Myanmar, Mr. Bhaskar Barua, FAO Representative to Myanmar, Ms. Makiko Uemoto, representative of the FAJ and Mr. Tang Hon Tat, CTA of RMFP. The keynote address was delivered by Mrs. Mette Loyche Wilkie of FAO, Rome. Papers were presented on C&I development in the Lin’an, Ngao, Paukhaung and Ulot model forests, as well as on field level C&I or related initiatives by the RECOFTC, ITTO, CIFOR–Nepal, JIFPRO, Kyoto Prefectural University, FAO, FAJ, FORSPA and MTCC. An analysis of the C&I processes in the four RMFP countries was presented by Mrs. Mette Loyche Wilkie on the second day. Field visits were made to various MF activities at the Paukhaung MF (see following article on the field visits).

Among the observations and recommendations made were,

Observations:

- Sharing of experiences and lessons learnt among countries can help improve the C&I development process in each country.
- Inputs from all stakeholders, including local communities, are important in identifying field level indicators that are meaningful.
- Most of the RMFP countries have based their MF C&I set on existing national sets which, in turn, were based on the ITTO, ASEAN or Montreal Process sets.

Continued on page 2



Opening ceremony of 3rd regional model forest workshop

INSIDE

- 2 - Project steering Committee Meeting
- 3 - Field Visits to Paukhaung MF
- 4 - Lin’an MF Bamboo Partners Meet
 - Update on Activities in Lin’an MF
- 6 - Pilot Code of Harvesting Practice in Myanmar
- 7 - Agroforestry Under Natural Forest
- 8 - Woodfuel Utilization Training
 - Mushroom Cultivation Training
- 9 - Tapping Almaciga Tree: the Philippine Experience
- 10 - Community-based Bamboo Planting in Ulot Watershed MF
 - Rattan Production and Management Training
- 11 - Economic Diversification of Rain Tree in Ngao MF
- 12 - Ngao MF C&I Workshop
 - Indonesiana Visit Ngao MF

QUOTE

“God give us the grace to accept with serenity the things that cannot be changed; courage to change the things that should be changed; and wisdom to distinguish the one from the other.”

(Reinhold Niebuhr, theologian, 1892–1971)

3rd Project Steering Committee Meeting

The 3rd Project Steering Committee (PSC) Meeting of the RMFP was held in Yangon, Myanmar on 30 Nov. and 01 Dec. 2001. The meeting, hosted by the Myanmar Forest Department (FD), was organised by the RMFP and FD. About 25 representatives from the four participating countries (China, Myanmar, Philippines and Thailand), Forestry Agency of Japan (donor), FAO (Rome, Bangkok and Myanmar) and the RMFP attended the meeting. Prof. Kyaw Htun, NPC for Myanmar, was elected as the Chairperson, and Dr. Romeo Acosta, NPC for the Philippines, as the Vice-Chairperson.

The first day focussed on presentations and discussions on progress reports of 2001 and work plans for 2002 by the CTA and the four NPCs. The second day focussed on discussions on documentation of experiences and lessons learned from the model forests, including best practices for SFM.

The chairperson, Prof. Kyaw Htun, thanked the Government of Japan for funding the RMFP, which is important to all four project countries. The RMFP CTA Mr. Tang said that this PSC meeting is perhaps the most crucial one so far as there are now eight months left before the RMFP ends in July 2002. He said that a special session had been added for the second day of the PSC meeting to discuss documentation of the experiences, lessons learnt and outputs of MF activities at the Project country and regional levels. All countries have made significant progress in different aspects of their MF development, especially in the past year. He urged all NPCs to maintain the momentum of the past year, and to focus on producing tangible and useful outputs in the coming year.

Ms. Makiko Uemoto of the Forestry Agency of Japan thanked Myanmar for hosting and co-organising the 3rd PSC meeting and regional MF workshop with the RMFP. She agreed that this is the most critical PSC meeting to-date, and emphasised the need to focus on the outputs of the project. Mr. Bhaskar Barua, FAO Representative to Myanmar, said that the MF approach seems to be an effective way of moving towards sustainable forest management, and sustainable development. Building partnerships, especially within a relatively short period of time, and with limited funds and manpower, is not easy and is a great challenge. Mrs. Mette Loyche Wilkie of FAO Rome said that the recently completed regional MF workshop was a good workshop and provided much information on the progress of C&I development for the MFs in the project countries. She urged project countries to identify, document, publish and share their "best practices", and continue sharing information, expertise and experiences.

The progress reports of China, Myanmar, Philippines and Thailand were presented by Prof. Jiang Chunqian, Prof. Kyaw Htun, Dr. Romy Acosta and Mr. Jira Jintanugool respectively. Following the presentations and discussions, it was generally felt that all four project countries had made good progress in 2001. All project countries confirmed their commitment to continue developing their MFs after the RMFP ends in July 2002, although probably at a slower pace because of resource constraints. They also agreed to focus on demonstrating tangible and useful outputs and benefits from the MFs, and documenting MF activities, experiences, lessons learnt and best practices. It was noted that a terminal evaluation of the project will be undertaken in 2002.

Continued from page 1 - 3rd Regional Model Forest Workshop

- 7 or 8 criteria were identified and correspond to the 7 elements common to all the eco-regional processes.
- 19 (Philippines) to 60 (Thailand) MF indicators were identified.
- Innovative indicators were identified by the four countries, which reflect MF attributes.
- RECOFTC's work in the Western Forest Complex of Thailand showed that management objectives can be set by local groups, using simple codes or guidelines.
- ITTO's 2000-2001 training workshops indicated that most countries have problems reporting on up to half of the indicators.
- CIFOR's Adaptive Co-Management (ACM) project in Nepal has enhanced women's participation in the decision making process; and increased leadership by women.
- JIFPRO has been promoting MF activities in Myanmar and Vietnam, in cooperation with Government agencies since 1999.
- In Japan, some local stakeholders are considering the Miyagawa watershed in Mie Prefecture as a MF candidate site and preliminary activities have been carried out.
- FAO has had long experience in the field of C&I for SFM and, with ITTO, is the focal agency for C&I for SFM within the Collaborative Partnership on Forests established to support the UNFF.
- An International Expert Meeting on Monitoring, Assessment and Reporting on the Progress towards SFM hosted by Japan from 5-8 November 2001 exchanged views on MAR within the UNFF context. C&I has been widely accepted as one of the mechanisms for MAR on SFM.
- Auditing is the systematic verification of whether specified practices conform to the audit criteria, and is useful for reporting

- progress of SFM practices and preparation for forest certification.
- Forest certification is a good way of measuring SFM, but it is expensive and difficult to implement.

Recommendations

- *RMFP countries start with a small sub-set of indicators and ensure acceptance of stakeholders by concentrating initial efforts on priority issues identified by them.*
- *More awareness, understanding and training on C&I should be provided to MF stakeholders and facilitators.*
- *Management guidelines for soil and water conservation, social aspects and forest workers' welfare should be strengthened.*
- *Local level monitoring and evaluation systems should be developed based on local conditions and management objectives set by local groups.*
- *Monitoring, assessment and reporting based on key indicators should be used as a first step for those with insufficient resources.*
- *The main MF attributes should be represented in the indicators developed.*
- *The list of indicators should be reviewed regularly to ensure that it reflects changes in values and knowledge.*
- *Standardised and replicable methods for data collection should be used.*
- *Existing documentation and frameworks (FAO, ITTO, CIFOR, Canadian MF Network) should be used in refining initial sets and developing data collection guidelines.*

Field Visits to Paukkaung MF

During the 3rd Regional Workshop in Pyay the participants visited the following activities in the Paukkaung MF.

North Nawin Dam

This dam, established in 1979, is one of over 100 dams in Myanmar, and supports double-cropping of rice through irrigation. The catchment area had been over-exploited for fuelwood and shifting cultivation. Forest conditions in the catchment area have improved in recent years due to better protection, employment of former fuelwood cutters as forest workers and plantation efforts.

Padamya Nursery

This nursery was established by the FD in 2000 with assistance from JIFPRO to provide seedlings for planting on homesteads, farms and agroforestry plots as part of MF activities. In 2000/2001, 80,000 seedlings of fruit, fuelwood and timber species were raised, and 59,750 were distributed to about 1,000 households. The FD plans to establish a fuelwood plantation next year in collaboration with the villagers to address their fuelwood needs.

Letha Forest Village Primary School

Letha Forest Village was established when work on the dam began in 1970. Most villagers were casual workers, but since 1993, the FD has established plantations for timber and watershed protection, and created employment for most of the 37 households. The school was constructed in June 2001 with support from JIFPRO to provide education for the children of the village.

Kyaton Reserved Forest

Here, natural Dipterocarp regeneration has been assisted through clearing of undergrowth, thinning, coppicing and climber cutting, with support from JIFPRO. The area was previously over-exploited for commercial harvesting of firewood. The result of the treatments was impressive. *Dipterocarpus tuberculatus* was abundant, with *Terminalia tomentosa* as the co-dominant species in some areas. Other species include *Xylia kerii*, *Lagerstroemia speciosa*, *Pentacme siamensis* and *Terminalia bellerica*. Golden deer has returned to this forest.

An agroforestry plot established with RMFP support, with Teak and *Cassia siamea* intercropped with chickpea and beans, was also visited. 400 trees were planted on 0.5 acres. The output of beans was 20 baskets, worth 25,000 Kyats.

Darku Nursery

This 3-ha nursery was established in 1961. It was upgraded with RMFP assistance in early 2000 to raise 200,000 seedlings for distribution for the National Arbor Day in July. The species included kapok, jackfruit and mango.

Sri-Ksetra Museum in Mawsa Village

The museum displayed artifacts found in Sri-Ksetra, an ancient Pyu city located 5 miles East of Pyay. This city was established in the 4th century AD and destroyed in the 10th century AD. Artifacts included large stone urns, stone carvings, Buddha images and terracotta votive tablets.

Pyay Teak Reserved Forest

Planting of teak started in this area in 1857, and more than 500 of the original trees are still standing. Additional plantings took place from 1940 to 1960, and the total area is now 31.6 ha, with 3,614 trees. The average height of the oldest trees is 120 feet (about 36 m) and the average girth is 8 feet 9 inches (about 2.65 m). Most trees have very straight boles and the stand is used as a seed source.

Partnership Group Meeting at Bawdigone Village:

The 2nd Bawdigone village partnership group meeting was being held at the local school, which the workshop participants observed briefly. About 60 men and 15 women were present. With RMFP support, the group meets about once in two months, usually on weekends when the school is closed. A "self-reliance" nursery had been established with RMFP support beside the school, to raise 5000 seedlings for distribution. The nursery was handed over to the Village Committee in July 2001.

Elephant Logging at Compt. 16/17, Middle Nawin RF

A *Spondias pinnata* tree was felled by two men using a hand cross-cut saw, and cross-cut into two logs. A 30-year old elephant, guided by a mahout, skidded the logs to a nearby landing. Logging in the 800-acre compartment is carried out by five 2-person felling teams, under the supervision of a Timber Ranger and 2 assistants, and with the help of 2 elephants and their mahouts. They can fell 30 trees/week, and need another week to cross cut the trees. Only "dry" teak (i.e. girdled by FD 3 years ahead of logging) is being cut in this compartment. However, pre-girdling is being phased out, and after next year, green teak will be cut. A pilot Code of Harvesting Practice project is being implemented in this area, with support from the RMFP.

Karen Village

The villagers practise 10-year rotational cultivation, and carry out cloth weaving. The surrounding forests are still intact. The villagers had been provided with wooden housing, a primary school and a church by MTE several years ago.

Seed Production Area at Bago Yoma Crossing

The seed production area includes 40 acres of a pure teak plantation planted in 1967, and maintained with JIFPRO assistance.

Community Forestry Plot at Bago Yoma Crossing

This is a 6-acre community forestry (CF) plot, over which a Community Forestry Certificate has been issued. The CF area is within reserved forest, and was formerly used as a forest nursery, log landing and helicopter landing pad. With RMFP support, and in consultation with the nearby village, 6 families were selected to plant forest and fruit trees, and cash (food) crops. Each family is assigned a specific one-acre plot.



Elephant-skidding at Paukkaung MF

Lin'an MF Bamboo Partners Meet

A meeting of 29 participants representing 15 MF partners and four representatives from non-partner groups concerned with bamboo development was held in Lin'an from 27-28 August 2001.

On the first day, the participants went to Anji County of Zhejiang Province which is famous for Moso Bamboo production and processing. Mr. Chen Jianying, senior engineer of Anji Forestry Bureau, introduced the status of bamboo development in Anji County. A video on Moso bamboo practice was shown to the participants who also visited the Bamboo Museum and bamboo demonstration farms. The average output value per mu of Moso bamboo shoot and timber has reached 1500-2000 yuan RMB.

The area of bamboo in Anji County is about 1 million mu (15mu = 1 ha) of which 760,000 mu are under Moso bamboo. Since 1980s, farmers have been supported and funded by the government for bamboo production. There are about 1500 enterprises related to the processing of bamboo timber and shoot with an output value of 2.4 billion yuan RMB.

On the second day, the participants returned to Lin'an, and discussed how to share experiences with Anji County in the development of bamboo. During the discussion, a participant from Tianjin Province introduced the application of non-polluted fertilizers for bamboo cultivation. The participants agreed that the main

priorities in Lin'an are to improve the management of Moso bamboo plantations, and extend the cultivation techniques for production of non-polluted bamboo shoots. The partners hope to get policy and technical support from the Forestry Bureau. Suggestions on the strategy of bamboo development such as the establishment of a special office for bamboo and hickory development, and expanding markets to Shanghai and Nanjing were made by the participants.

*Prof. Jiang Chunqian, Chinese Academy of Forestry
Mr. Ge Huaping, Lin'an Forestry Bureau*



Field visit during Lin'an MF bamboo partners meeting

Update on Activities in Lin'an MF

Forest policy review

A review of forest policy changes and their impacts on forest and land use practices and management in Lin'an County is being carried out by the Lin'an model forest secretariat. The study is organised in several parts.

In the first part, secondary information is collected to provide a historical analysis of overall forest policy changes in China, and the history and changes in forest policy in Lin'an. This included land use system changes, forest products price and tax policy changes, harvesting policies, and marketing.

The second part included interviews of key informants to assess the long term and short term impacts of policy changes during seven periods between 1949 and 1999.

The third part focused on land use system changes at the village level (five villages) by taking samples at the family level (95 families were sampled). Preliminary results included,

- recognition of land tenure systems – 4.3%;
- 60% of households felt responsibility (for land use decisions) should belong to them;
- 22% felt that the duration of land tenure/contracts should be more than 50 years;
- 51% felt that the present system/line of responsibilities

should be adjusted;

- 90% are not willing to transfer from the present scheme;
- While forming regulations on land transfers, equity should be taken into account
- 75% of households in collectives felt they should be transferred, but not to minority groups;
- farmers are still largely dependent on the land; the land tenure system should be changed.

The fourth part is the use of Participatory Rapid Rural Appraisal (PRRA) in a community forestry situation. Four groups of persons (elderly, cadres/leaders, households in scenic areas, and women) among 50 households and 71 tourists were surveyed. Among the issues addressed were the compensation fee for ecological benefits, and the change in attitudes of people toward eco-tourism. The data are being analysed.

The fifth part covers the forestry industrial re-organisation of the region, including the development of wooden toy industry and the flow of policy; the sixth part involves further collection of secondary data, and the seventh part involves data collected from 175 families in Baisha village. Initial results indicated that,

- tax on wood and forest products, and additional tax by

Continued on page 5

Assessment of impacts of bamboo monoculture

Bamboo cultivation has increased rapidly in the past two decades in Lin'an because of a need to increase farmers' income, with a focus on the economic, but not the environmental and biodiversity, aspects. Preliminary research has shown that,

- bamboo cultivation using mulch of rice straw, or using weedicides with no mulch cover, had the highest negative impacts on biodiversity as no other plants were able to grow.
- where no mulch cover was used, the original plant species can return after 2 to 3 years.
- using natural regeneration with no management results in more plant species being present.
- there are fewer plant species in bamboo plantations compared to timber (e.g. *Pinus*, Chinese fir) plantations.
- farmers usually overuse fertilisers, as they think that increased fertiliser use will increase crop yields/incomes.

Therefore, the nutrient level in bamboo plantations is usually higher than other land uses. Since 2000, research has been carried out to find ways to reduce the amount of fertilisers used. Training workshops will be held, and guidelines prepared for fertiliser use by soil type.

- biodiversity has generally been reduced by bamboo monocultures, and it is necessary to develop management models to improve bamboo production and income, and minimise adverse impacts on plant biodiversity.

The data collected is still being analysed, and will be written up by end of the year. More work and funds will be needed for run-off and pesticide studies in the bamboo plantations.

By Mr. Yu Shuquan, Prof. Zhang Shougong and Prof. Jiang Chunqian

Eco-tourism study

This study covered Baisha village, Linmu township, Tianmu Yang Lin, Qin Yun, and Taihu headwaters, during February-May 2000. The objective was to assess the impact of eco-tourism on forest resources and environment, and the extent of the impacts. 500 copies of a questionnaire were distributed by hand to eco-tourists at the site entrance and nearby restaurant, and returned in a box or collected by the surveyers. 456 valid questionnaires were returned.

The results showed that,

- a 2-metre wide, 4 km road had taken up 5,600 m² of forest land, or 1.2% of the total area.
- 4,300 m² of forest land were used for construction of service areas, e.g. toilets, gate, restaurant, etc.
- 2m on either side of the road and service facilities (or about 12,400m²) was directly impacted by the activities of eco-tourists.
- indirect impacts, such as waste disposal were observed but not measured. These impacts were not very large as the visitors were generally environmentally aware and possessed civic consciousness.
- responses to the questionnaires indicated that about 10% of the respondents had high environmental awareness; about 27% had medium awareness; about 30% had average awareness; 29% had some awareness; and 2% had no awareness.
- in response to whether the environment can be protected at

the same time as eco-tourism development, 62% said yes, 35% said maybe, and 3% said no.

- in response to whether their visit to the site had increased their environmental awareness, 91% said yes, and 9% said no.
- assessment of economic impacts is not yet completed. There were 350,000 visitors in 2000, providing an estimated income of 1.8 million Yuan plus gate collections of 6 million Yuan. Entrance fee increased from 28 Yuan per head in Oct. 1999 to 38 Yuan in April 2001. Changes in local residents' income were difficult to assess. 20% of the gate collections went to the local village.
- maximum ("designed") capacity of the park was 8,000-10,000 per day. But local papers have reported complaints that the park was too crowded, and suggestions that this be limited to about 5,000 per day. An assessment of the optimum carrying capacity of the park is an urgent activity to be undertaken.
- most visitors spend an average of 1-2 hours in the park, and were on half day trips. Finding parking space was one of the biggest difficulties.

The report of the study will be ready by December 2001. It will be in Chinese, with an executive summary in English.

By Mr. Wei Xinliang, Prof. Zhang Shougong and Prof. Jiang Chunqian

Continued from page 4 - Forest policy review

local authorities, are too high, and deter farmers' enthusiasm;

- % of tax collected that is returned to the forest is very low; timber sales policy is very rigid;
- development aims of land tenure system are unclear;
- compensation policy, source of compensation funds, and responsible agency, are not clear (farmers feel it should be the Government); and
- main products are unclear; and technical knowledge is relatively low.

The Government is receptive to constructive criticisms, as provided in the report, and the authority to change policies can be exercised at different levels of government, depending on the policy involved. Next steps include completion of data analyses and preparation and submission of report by end of January 2002.

By Assoc. Prof. Shen Yueqin, Prof. Zhang Shougong and Prof. Jiang Chunqian

Pilot Code of Harvesting Practice in Myanmar

Introduction

In 2000, the Forest Department (FD) of Myanmar and Myanmar Timber Enterprise (MTE) developed a National Code of Forest Harvesting Practice (CoHP). This code, modeled on the FAO Code of Practice for Forest Harvesting in Asia-Pacific, was developed by a National Working Group to ensure that the standards were appropriate for the Myanmar situation. To introduce the Code, it was decided to undertake a pilot implementation at the Paukhaung MF. The FD sought assistance from RMFP which provided a consultant to work with the FD and MTE to plan and prepare for the pilot implementation.

Forestry in Myanmar

Myanmar is somewhat unusual in that the majority of the annual harvest of some 3.5 million cubic metres of teak and other hardwoods is carried out using elephants. Typically trees are marked, and teak is girdled two years prior to logging. Trees



Felling a teak tree by hand

are felled by axe and cross cut with a 2-person hand saw before extraction to a landing by elephant. Logs are either loaded onto trucks for transportation or floated downstream. This approach to harvesting poses quite different issues to the largely heavy machinery-based logging of the Asia-Pacific Code. Myanmar, through the FD and MTE, has a long tradition of professional forestry, and over 100 years of experience in elephant logging.

Implementation strategy

In consultation with CTA RMFP and NPC Myanmar, the following strategy was adopted.

- Field assessment of implementation needs and development of implementation guidelines
- Preparation of implementation material such as field guides
- Conduct of a training course for staff involved in the pilot implementation
- Pilot implementation at Paukhaung MF
- Implementation review and development of revised guidelines for general implementation of CoHP

Field assessment

In October 2001, Mr. Clynt Wells (FAO Consultant), Prof. Kyaw Htun of the FD and U Khin Zaw of MTE, assisted by U Mya

Win and U Win Myint of the FD, conducted a field assessment of present practices and code implementation needs.

The assessment involved discussion with senior and field officers of both the FD and MTE; field inspection of operations at Paukhaung MF; preparation of preliminary guidelines for implementation; conduct of a workshop for field staff of FD and MTE at Paukhaung MF; conduct of field training to test the proposed guidelines and provide awareness training; and preparation of guidelines to assist implementation of the Code.

Assessment results

The assessment was carried out by use of a checklist of required standards. In the field, current practice was assessed and conformance to code standards noted. Where differences or problems existed, the matter was discussed and solutions proposed.

This documented process thoroughly assessed the current status, and identified issues and aspects that had to be addressed. From the results, a training programme to address actual field needs has been developed. The assessment indicated that:

- Myanmar has a well developed institutional framework with well trained professional staff;
- relationship between FD (forest custodian) and MTE (timber harvesting agency) is professionally cooperative, and focused towards improvement;
- Myanmar has a well developed policy and regulation framework within which to implement an effective Code;
- current practices are well documented and generally sound i.e. well established silvicultural guidelines exist; planning procedures cover forest management, strategic harvesting and operational plans; pre-harvest survey maps and marking trees to be harvested; felling is carried out manually using cross cut saws; utilisation standards are high and logs are accurately measured and marked; extraction by elephant is remarkably low impact; landings are small (20 metres by 6 metres) and well sited; haulage tracks are well sited and quite narrow in both clearing (6 metres) and formation width (4 metres); and
- the initial Code of Practice is basically a sound document.

The assessment highlighted the advantages of elephant extraction. In comparison to tractor logging, elephant extraction offers a very low impact means of moving logs to the landing. Elephants were observed dragging logs uphill on a low angle to the contour along a trail that was less than one metre in width. This narrow track, unless used many times, suffers very limited disturbance and is unlikely to be a source of soil erosion.

The assessment also indicated:

- Watercourse buffers: The Myanmar Code has adopted Asia-Pacific Code watercourse buffers that were designed for machine logging. Given the low impact action of elephants and the need to access streams for log transport, the Code needs some adaptation to cater for the use of elephants.

Continued on page 7

Agroforestry Under Natural Forest

Agroforestry is a land-use practice using the beneficial effects of trees and shrubs. The potential of the practice has been proven, particularly in the tropics where soils are generally degraded and infertile, and use of fertilizer is a constraint for poor farmers. As a result, agroforestry systems have been introduced and applied under diverse natural settings to meet different purposes, including soil and water conservation and reforestation.

Dipterocarp forests in the Kyatkon reserve located in the North Nawin watershed within the PKMF were degraded due to over-exploitation of timber, excessive collection of firewood and charcoal production. Consequently, the villagers living in the watershed area have been facing a serious shortage of firewood and forest products. This has been compounded by a scarcity of arable land.

A case in the point is the Letha village in Compartment No. 4 of the Kyatkon reserve. Most of the villagers are landless and casual workers conducting different livelihoods. Some are fishermen. U Tha Cho, a villager from Letha Village, attended a two-day agroforestry training workshop conducted in the Paukkaung MF area from 29-30 January 2001 under the auspices of the RMFP. He then initiated a one-acre agroforestry plot under the existing natural *Dipterocarp* forest near the village. He conceived the idea as a means of obtaining much-needed arable land, while attending the agroforestry training.

Initially, about 110 different tree species were growing on the selected plot. By applying the concept of improvement felling (he was a forest worker for many years) he removed a total of 60 commercially unimportant species which had been interfering with commercially important species such as Teak (*Tectona grandis*), Padauk (*Pterocarpus macrocarpus*), In

(*Dipterocarpus tuberculatus*), Thitya (*Shorea obtusa*), and *Taukkyan* (*Terminalia alata*), with the object of providing more space and light to enhance the growth of the remaining trees. He grows mung bean (*Phaseolus radiatus*), pigeon pea (*Cajanus cajan*) and Lablab bean (*Dolichos lablab*) on his plot, utilizing the available space and light under the trees.

He enriched the plot with a total of 400 tree seedlings obtained free of charge from the FD's Padamyra nursery. Timber trees including Teak, *Sit* (*Albizia procera*) and *Mezali* (*Cassia siamea*), and fruit trees including guava, cashew nut, mango and jack fruit, are being planted in the plot at a spacing of 2.6 m by 2.6 m, mixed with agricultural crops.

U Tha Cho is expecting to receive more than 103,000 Kyats from the two crops of mung bean and Lablab bean. He will harvest pigeon pea in February 2002 and get additional income plus fuelwood from pigeon pea stalks. The revenue from the one-acre agroforestry plot will contribute to his family income although the major source of income for his family is fishing. U Tha Cho said that he would grow agricultural crops on the same plot next year after pruning and cleaning the trees to ensure enough light for the crops.

U Tha Cho's initiative provides benefits to the FD and landless villagers. After two years of cropping, the residual forest will have sufficient timber trees, with fruit trees and fuelwood trees at the lower stories. Agroforestry under natural forest has significant potential in North Nawin watershed to address the scarcity of arable land, restoration of degraded natural forests generation of additional income for the farmers, and protection of the critical watershed areas.

By Prof. Kyaw Htun, NPC

Continued from page 6 - Pilot Code of Harvesting Practice in Myanmar

- Roads and drainage: While roads were generally well-sited and aligned, effective drainage was largely absent. As a result, these became impassable in wet weather, and subject to significant erosion and wash out.
- Planning and audit protocols: There is a need to formalise some protocols for operational planning to cover all Code aspects. Operational assessment and audit are new processes to Myanmar, and need prescription.
- Safety: Safety practices listed in the Code are primarily designed for use of chainsaws, and have little relevance to current practices.

There is a need to develop an appropriate safety system for the Myanmar situation.



An elephant pushing a log

Overall, given the inherently low impact nature of elephant extraction, it was recommended that Myanmar adopt a full Reduced Impact Logging approach to harvesting. This would include all aspects including inventory, yield calculation and regeneration. Such guidelines will have to be adapted to the Myanmar situation. With this in place, Myanmar has the potential to be low impact, and not just reduced impact, in its harvesting operations.

Future action

Since the assessment, pocket field guides have been prepared to combine both the Code standards and the recommended implementation guidelines in a simple and convenient field book. These, together with Operator Pocket Guides, will be used as the basis for a training programme and the pilot implementation. To initiate implementation, a training programme on use of the field guides is planned for 21-29 January 2002.

By Mr. Clynt Wells, Consultant, Prof. Kyaw Htun, FD, U Khin Zaw, MTE, U Mya Win, FD and U Win Myint, FD.

Woodfuel Utilization Training

Firewood collection is one of the direct causes of deforestation in the PKMF area. Firewood is still a major source of energy for cooking and lighting in most villages. Due to population pressure and the increased demand for firewood for both household cooking and brown slab-sugar and jaggery (palm sugar) cooking, the farmers living near degraded forests have started to experience scarcity of firewood. Other sources of energy apart from firewood are not currently available in the MF area.

Although a woodfuel substitution initiative was launched nationwide a few years ago, the majority of the people living in the project area are still using traditional stoves for cooking and lighting, which are energy inefficient. Efficient utilization of woodfuel can reduce wastage of energy arising from wasteful woodfuel utilization. A training on the use and making of the stoves was conducted from 22-23 November 2001, and energy-efficient A1-stoves developed by the FRI were distributed. The trainees were shown how to make and use the stoves, and a total of 250 units of A1-stoves were distributed to eight villages in the watershed area. The training and stove distribution were supported by the RMFP.

Resource persons from the FD HQ and FRI (*Yezin*) shared their experiences with the villagers. Training was given to 31 villagers from eight villages, namely Bawdigone, Takauk, Thaikchaung, Chaunggalay, Kunhonsu, Laygyi, Inngagu and Wailuwun and two FD staff. The villagers were also trained to assess and record the amount of fuelwood used by families using the improved stoves and traditional stoves. The data will be collected and analyzed by the PKMF staff on a monthly basis. This will be accompanied by a parallel activity to encourage village-level nurseries to raise fuel wood species for planting around the houses in the eight villages.



Traditional cooking stove (left) and A1 (energy-efficient) stove (right)

When asked about their impression of the use of A-1 stoves in relation to the traditional stove, one household lady from Takauk village said that with the A1-stove she did not need to worry about fuelwood shortage because she could also use sugarcane residue (left after pressing out the juice) which was once regarded as waste. She appreciated the lower amount of firewood required by the A-1 stove.

Today, the demand for A1-stove is increasing in PKMF. “*We want to buy the stove if the project can’t provide any more*” one of the villagers from the Letha village said.

*By Prof. Kyaw Htun,
National Project Counterpart*

Mushroom Cultivation Training

More than 80% of the people in the PKMF are farmers, and very much dependent on forests for their livelihoods. Due to the scarcity of plain area, agriculture is restricted. In this context, promotion of income generation activities is critical aspect of the poverty alleviation process and to reduction of pressure on the forests. Training on income generation activities can lead to increased income levels of the farmers, thereby enhancing their socioeconomic status.

A mushroom cultivation project (for sale to the general public) has been successfully implemented by the FD in Yangon Division near the Hlawga National Park, since last year. With RMFP support, a mushroom cultivation workshop was conducted from 19-20 October 2001 at the PKMF Office for 27 trainees from 10 villages and two FD staff. U Salai Cin Do Thang, Mushroom Technician, was invited to share his knowledge and experience in mushroom cultivation. During the training, he discussed different topics of mushroom cultivation including techniques of cultivation for different types of mushroom, marketing and nutrient contents. It is planned to establish a small mushroom farm

at the PKMF Office, and the mushrooms will be sold at the local markets or for used own consumption. The farm will also serve as a demonstration plot for nearby villagers.

By Prof. Kyaw Htun, NPC and U Mya Win, Staff Officer



Trainees at mushroom cultivation workshop

Tapping Almaciga Tree: the Philippine Experience

Almaciga (*Agathis dammara* (Lambert) Resh.), a member of family Araucariaceae, is an important forest resource and a potential dollar earner. Its wood and resin have high demand in foreign markets because of their wide range of commercial uses. Almaciga is a conifer that reaches up to 60 meters in height and grows at elevations ranging from 150 to 2,000 meters a.s.l.

Almaciga is a major source of resin, or manila copal, in the country. In the past, Manila, Singapore and Macassar were considered the chief sources of copal. Manila was the major export center of the product; hence the name "Manila copal".

Resins are hydrophobic substances soluble in neutral, non-polar organic solvents. They may either be hard and brittle, or soft to be kneaded with fingers. They are transparent or opaque, and range from colorless to various shades of amber and pink. The resin is formed in the leaves, in specialized cells that line the resin ducts and are then secreted inside the ducts where they accumulate. Not all almaciga trees exude large quantities of resin. Those found in valleys, slopes and other sites protected from strong winds usually produce thick soft bark that exude resin abundantly.

There are two kinds of almaciga resin - ground resin or fossil resin. Ground resins are old, hard and amber-colored exudations from the roots and are dug out from the ground where almaciga trees were previously standing. Surface resins assume the shape of teardrops and later become hard. This kind of resin is not only demanded locally but is also exported to the United Kingdom, Germany, USA, China, Italy and other countries in considerable quantities.

This tree species is becoming scarce in Eastern Visayas, Philippines, specifically in the Ulot Watershed because of the failure of the people to recognize its potential value. To reduce indiscriminate tapping and burning of almaciga trees in the region, the proper procedure for tapping almaciga for resin was documented. With the tappers adopting the proper tapping procedure, an increase in resin production and an improvement in the local resin quality are expected.

Recommended tapping procedure

Materials: sharp knife/chisel, mallet, sprayer, *anahaw* leaves/cellophane, sulfuric acid, string, ladder

Procedure:

1. Tap only trees which are about 40 cm or more in diameter at breast height. Tapping of small trees (20 cm or less in diameter) violates the Philippine forestry regulation and is punishable by law.
2. Remove from the trunk loose bark, dirt and other foreign materials. Scrape the portion to be tapped.
3. Start the first tapping at the basal portion of the trunk, not more

than 30 cm from the ground or above buttress.

4. Make a horizontal cut of about 2 cm wide and 30 cm long using a broad-blade bolo or a chisel. Almaciga can be tapped more than once around the circumference, depending upon the size of the tree. Make sure that the distance between tapped portions is about 60 cm or twice the length of the cut.
5. Exert utmost care while cutting to minimize damage to the cambium; resin is exuded by the bark not the wood. Cutting beyond the bark will only injure the tree. If the cambium is damaged, the tapped portion may not heal, the wound will be exposed to insects and fungal attacks which will eventually result to the death of the tree.
6. Use a mallet or any suitable driving tool to drive the bolo or chisel. Take care to control the depth of the cut so as not to damage the cambium.
7. Spray by mist 50% sulfuric acid solution on the cut portion. Use the standard one-pint capacity plastic squeeze sprayer. Make only one pass of the sprayer. Too much acid will kill the fresh cut and its adjoining tissues and subsequently result in reduced yield. In making the fresh cuts, include all acid-damaged tissues to ensure good exudation. Remember that the more tissue are removed, the shorter is the tapping life of the tree.
8. Collect the exudates after a week or when the resin flow stops. Gutters or cups are needed to collect the exudates. To ensure a clean product, improvise a funnel made of either clean *anahaw* leaf or plastic bags.
9. When the resin exudation stops, make a fresh cut immediately above the first one of the same length but with shorter width, about 5 mm wide. Apply the acid as in step 7.
10. Tap vertically upward on the untapped portion of the trunk. When necessary, use a ladder for convenience. Make sure that tapping tools are razor-sharp at all times to ensure clean cuts.

Safety measures

Sulfuric acid is a strong chemical compound that must be handled with care. If the acid is accidentally spilled on the skin, it should be thoroughly washed off with plenty of water. If the same is spilled on the clothes, this should be removed immediately and then laundered.

Ordinary baking soda acts as an effective neutralizer for small amounts of acid coming in contact with the skin. As an extra-protective measure, acid-resistant rubber gloves should be used.

First aid measure

Acid in the eye: Wash the affected eye as quickly as possible with plenty of clean water. Follow this with another wash with lime water.

Acid on the skin: Wash thoroughly the injured area with plenty of water, and then cover the same area with a paste of baking soda and water. Ordinary cooking oil may be used in place of baking soda paste.

By Mr. Leo M. Poculan, Ulot Watershed MF



Fig.1 Scraping loose bark from the trunk of the almaciga tree



Fig.2 Start first cut not more than 30 cm from the ground or above buttress

Community-based Bamboo Planting in Ulot Watershed MF

Bamboo is a perennial grass that has several uses. It is considered an important non-timber species notably used for furniture, baskets, fish pens, handicrafts and other novelty products.



Bamboo "cuttings" being prepared for planting

There are four species of bamboo that are considered commercial in Ulot Watershed Model Forest. These are commonly known *aspatong*, *kabugawan*, *kawayan dilaw*, and *bagacay*. *Kabugawan* bamboo species were predominantly selected for planting by the Model Forest beneficiaries in nine barangays due to expected future demand in furniture industries and for food production.

Nine hectares were planted with *kabugawan* bamboo by 50 farmers after a bamboo training workshop conducted from 6-10 November, 2001 in Barangays Casandig and Tenani, Paranas, Samar.

Recently, a team consisting of Bert Ulep, Loida Nasayao and Emma Germano, all resource persons during the bamboo training workshop, and Forester Leo M. Poculan, the MF focal person, conducted monitoring of the planted bamboo. The team visited the bamboo plantation of Mr. Ricardo Bulfa, president of KAPPAS, and Mr. Abraham Abalos, president of TAP. Both reported that 90% of their planted bamboo had survived. Mr. Bulfa, informed the monitoring team that the other POs that participated in the planting of bamboo were all successful.

He said that the high survival rate of bamboo was due to the training on bamboo production conducted, farmers' inputs, supplies, materials and tools provided, timing of planting the bamboo and a strong partnership among the implementers (POs, DENR, LGU and RMFP). Ongoing planting of additional areas for bamboo are also being monitored by the team.

By Mr. Leo M. Poculan, Ulot Watershed MF

Rattan Production and Management Training

Rattan is one of the valuable NTFPs, which provides a livelihood to many of the upland inhabitants. It is utilized as raw material for a variety of crafts for home and office uses. The increasing demand for this forest species necessitates the establishment of rattan plantations and the replenishment of harvested stands.

A two-day training workshop on rattan production and management was conducted from 21-22 December 2001 in Barangay Tenani, Paranas, Samar. It was attended by 42 participants from several POs, namely, Paglaum han Barangay San Rafael Asso. Inc. (PHBSAI), San Rafael Integrated Farmers Asso. (SFIFA), Kauswagan han Cansolabao Asso. Inc. (KCAI), Katatapuran nga Pederasyon han Parag-uma ha Samar (KAPPAS) and Tenani Association for Progress (TAP).

The training workshop was aimed at providing appropriate rattan production and management techniques, and creating awareness among the upland dwellers of the importance of rattan production. During the training, the participants came up with an action plan for planting rattan for the month of December 2001 and January 2002. A proposal was

submitted for assistance, such as provision of rattan seedlings, tools and food for workers.

*By Mr. Leo M. Poculan,
Ulot Watershed MF*



Participants at rattan production workshop at Ulot MF

Economic Diversification of Rain Tree in Ngao MF

Rain tree (*Samanea saman*) is an exotic tree that was introduced to Thailand from tropical South America about hundred years ago for ornamental and shade tree planting. Subsequently, it spread throughout the kingdom.

In 1967, the Royal Forest Department (RFD) promoted Lac cultivation extension project in northern and north eastern Thailand, which expanded rain tree planting. Utilization of its wood was overlooked due to availability of Teak and Rose wood. When these became scarce, rain tree wood became more utilized.

There are many reasons for its growing popularity amongst rural people. It is easy to establish; it provides good shade; the wood texture and bending strength are suitable for wood carving and furniture; and its durable roots are suitable for making mortar and pestles. The best Lac production comes from inoculation on rain trees. The foliage and pods can be used as livestock feed. It is a leguminous tree, and hence its foliage can produce good quality compost.



Rain tree for Lac insect rearing

Woodcarving and mortar processing

Woodcarving using rain tree wood has been carried out in northern Thailand for a long time. Earlier, woodcarving using teakwood was very popular, with few products made from rain tree wood. Presently, rain tree is the main raw material, and use of teak is less due to higher cost and strict government regulations on teak. Wood carving industries switched from teak to rain tree from 1976. At present, craftsmen get their rain tree raw materials from middlemen, paying about 1,000-2,500 baht/m³ depending on wood quality and dimension. This is about 10 times more expensive than 10 years ago.

The roots are used for making good quality mortar, which is known to have greater durability and lightness. The villages of Ban Luk and Mae Tha in Lampang province discovered these properties of rain tree wood. Raw-materials come from neighboring provinces such as Phrae and Utaradit at a price of 375-750 baht per m³ depending on root size and quality. Increased demand for mortar and the shortage of rain tree roots have led to an increase in the price.



Mortar made from rain tree root

Lac cultivation

Lac is the substance secreted by the Lac insect and deposited on the host tree. The Lac insect lives by sucking sap from host tree. This substance is sticky and yellow in colour initially, but will gradually become solid when exposed to air and turn reddish brown. Raw Lac, collected from host tree, consists of resin, wax and dye, Lac body and other substances. Lac dye and seed Lac are two main products used for making shellac, dye, laminated board and Lac glue. In Thailand, most of the Lac cultivation is in the north including Lampang, Chaing Mai, Chaing Rai, Phayao, Phrae and Nan, and in the north central i.e. Kampaengpet, Nakornsawan, and also on a small scale in the northeast.

Rearing and maintenance of Lac insects are simple. The brood Lac is inoculated on to the tree in November-December, and will be ready for harvesting in the following October-November. Presently, there is a shortage of trees for Lac cultivation due to a rapid increase in the number of Lac farmers. The cost of Lac cultivation is 1,000-2,000 baht per tree depending on tree size. Lac production is about 100-200 kg per tree depending on Lac inoculation.

Interest in this activity has recovered after Lac prices declined for ten years. In 1977, Lac cultivation was very popular due to the good returns (70 baht per kg). In 1985, however, the price was only 3 baht per kg of Lac, or even lesser. In 2000 and 2001, the price had recovered to 20-25 Baht/kg and 35-40 Baht/kg respectively.

Conclusions

At present, the demand for rain trees for producing wood and Lac is growing. Existing trees and limited new planting are not enough to meet the demand. Therefore, extension activities to encourage planting rain trees in villages should be carried out. There may be more uses of this tree, but there is no information available. Further research on distribution, utilisation and marketing is needed.

By Mrs. Poonsri Wanthongchai, RFD, Ngao MF

Ngao MF C&I Workshop

A workshop on the *Development of Local Criteria & Indicators for Sustainable Forest Management for Ngao Model Forest* was held from 18-19 October 2001 in Lampang Province, Thailand. The Royal Forest Department (RFD) conducted the workshop in collaboration with the RMFP.

The aim of the workshop was to review and discuss the status of C&I for SFM in Thailand, and to provide guidance and assistance for the development of C&I at the field level or FMU level. Sixty two (62) persons, from RFD and other government agencies, local organizations, local leaders and resource persons, participated in the workshop.

M.R. Bhadharajaya Rajani, Deputy Director-General of RFD opened the workshop and gave a keynote speech. The RMFP CTA also delivered a short address. Two technical papers were presented to provide background information for the participants.

The workshop was designed to obtain involvement of the participants in compiling indicators under Criterion 3 "*Forest Ecosystem Health and Condition*" and criterion 7 "*Economic, Social and Cultural Aspects*" of the national level C&I for SFM in Thailand. The participants were divided into two groups to discuss each criterion and relevant issues, and the results were presented at the plenary session. These included,

- 10 indicators under Criterion 3, and 17 indicators under Criterion 7 were compiled.
- the number of indicators should be reduced through a

screening process by field research and the national C&I committee.

- the duration of the workshop should have been three days, in order to cover all the information needed for the expected output. Nevertheless, the two days provided an opportunity for collaboration among all stakeholders, which is a starting point for Ngao MF.
- the outcome of the workshop will provide the tools for measuring, assessing and monitoring the progress towards SFM. The discussion of these tools will take place at the next meeting. Local people, not the RFD, must initiate MF management in a collaborative effort.
- the leader of each forestry office should be invited, at least to join the opening ceremony, achieve a better understanding, appreciation and collaboration with local offices.
- the utilization of bamboo was emphasised during the workshop. For the sustainable management of bamboo, support should be sought from the FAO/RMFP.
- the sub-district administrative organization, which is elected by the local people, should play a leading role in the development of the MF and of the local level C&I.

A special session was held after the workshop to elect an Interim Ngao MF Partnership Committee. A Chairman, Secretary and nine committee members were elected to prepare for the formation of a Ngao MF Partnership Group, and election of office bearers.

By Mr. Jira Jintanugool, NPC

Indonesians Visit Ngao MF

The RMFP Newsletter has created awareness and interest not only among Project country stakeholders but also elsewhere. After reading an article in the RMFP newsletter on edible insects from Ngao MF, three Indonesian officials, Ms. Sittichai Haminah, Mr. Sukanda, and Ms. Rektarini, from the Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry, Indonesia, paid a visit to Ngao MF on September 29 after attending the International Community Forestry Conference in Chiang Mai.

Mr. Suraphong Chaweepak, Ngao MF Officer, guided the visitors to observe activities of the MF, such as natural teak forest, Tham Pha Tai National Park, Huay Thak plantation, Huay Thak arboretum, and Forest Pest Research and Control Center.

The visitors were pleased to see the activities, especially the edible insect research and demonstration programme. Some insects such as *Brachytrupes posutertosus* and *Xylotrupes gidion* have been raised at the center. They wished the MF development initiative every success, and requested that some of the best practices of the MF be shared with the neighbouring countries.

By Mr. Suraphong Chaweepak, Ngao MF Officer

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