



MINISTRY OF FORESTRY  
FOREST DEPARTMENT, MYANMAR  
AND  
INTERNATIONAL TROPICAL TIMBER ORGANIZATION



ITTO Project PD 146/02 Rev. 1(I)  
"Promoting Sustainable Utilization of Bamboo through  
Community Participation in Sustainable Forest Management"

International Training Workshop on Bamboo Handicraft, Bamboo Weaving and  
Furniture Processing Technologies



Sichuan Province, People's Republic of china

October 10 to 31, 2005

Training Workshop Rep.  
(DB) ✓  
18 Dec. '06  
No. 1935

**International Training Workshop on Bamboo Handicraft, Bamboo Weaving and  
Furniture Processing Technologies  
at Sichuan Provinces, People's Republic of China  
October 10 to 31, 2005**

Min Thu (Junior Assistant)  
Ni Ni Thin (Junior Assistant)

Forest Department Compound, West Gyogone, Insein, Yangon, Myanmar

Tel: (951) 681857, 681858

e-mail [friygn@mptmail.net.mm](mailto:friygn@mptmail.net.mm)

## CONTENTS

1.	Introduction.....	1
2.	Objectives .....	1
3.	Handicraft and Weaving .....	1
4.	Bleaching and Dyeing.....	3
5.	Furniture .....	3
6.	Recommendation .....	6
7.	Conclusion .....	7

**Report on International Training Workshop on Bamboo Handicraft, Bamboo Wearing and  
Furniture Processing Technologies of Sichuan Province,  
October 10-31, 2005**

**1. Introduction**

Bamboo which belongs to the family Graminace has a wide range of distribution in Myanmar. So far 17 genera with 97 species of bamboo have been recorded in the country. The species is greatly used by the rural people but their utilization is limited due mainly to the outdated processing technologies and lack of quality products. Myanmar needs to utilize bamboo resources sustainability and produce quality products. ITTO Bamboo Project "Promoting Sustainable Utilization of Bamboo through Community Participation in Sustainable Forest Management" PD 146/02 Rev.1(I) is being implemented to enhance the socio-economic benefits of bamboo for the rural communities through their active participation in sustainable management and utilization of bamboo forest jointly organized by the Forest Department and the International Tropical Timber Organization (ITTO). One of the project activities is oversea training of the key project staff members. Two project staff attended the training at Sichuan province, China from October 10-31, 2005 supported by the project (Attached – 1). The training was organized by International Network for Bamboo and Rattan (INBAR). List of participants is given in (Attached – 2).

**2. Objectives**

1. To study the advance technological processes of bamboo product (especially in bamboo handicraft techniques and furniture making) from China.
2. To disseminate the advance technology on bamboo products making from China to the private sector and rural people of Myanmar.
3. To obtain the experiences and improved technologies on bamboo based value added products making and marketing
4. To study the bamboo production technologies not only for the promotion of export earning but also for promotion of income generation for the rural people.

**3. Handicraft and Weaving**

Chinese bamboo weaving art begins 6000 to 7000 years ago. During the long history of China, bamboo weaving products have become indispensable daily production, especially in south China. As the bamboo weaving art and technologies are developing, more varieties are supplied to the market, including handicrafts, daily utensils or their combinations.



Species, such as *Phyllostachys heterocycla var. pubesens*, *Neosinocalamus affinis cv. flavidorivens*, *Phyllostachys heteroclada*, *Pseudosasa amabilis*, *Bambusa chungii* are good for weaving.

There are two major types of weaving products, plain weaving and dimensional weaving. As a traditional art, bamboo weaving in China has a long history. Among the handicrafts produce in China, those made in Sichuan Province are report to be the best for their delicate weaving techniques, beauty and variety. Mr. Chen and his colleagues are the pioneers on the development of bamboo weaving industry. They taught us how to identify the age of bamboo and how to process the raw material for weaving into different products, i.e hat basket, furniture, mat, ceramic cover, painting and weaving for picture etc. (Attached – 3). We had a chance to practice how to do bamboo weaving.

The manufacturing process for bamboo weaving and handicraft can be divided into (5)major segments: Cutting → Removing nodes → Splitting → Stripping → Fixed-width splitting

### 3.1 Cutting

Handsaw and cutting machine are used, it is important that the incision be plain and smooth and the skin of bamboo should not be hurt. Before cutting, it is necessary to calculate the size and amount of bamboo strips according to the products needed.

### 3.2 Removing skin and nodes

After cutting, a plane knife is used for removing the skin. Fix the bamboo tube at a position so that it forms an angle of 45° with the surface of the ground. Put the blade on the surface of the tube, move the blade from lower position upward, using certain amount of strength so that crumbs of bamboo skin fall off. And then, remove the nodes on the bamboo. Usually planers are used.

### 3.3 Splitting

A plane knife is used to split bamboo. The size and amount of pieces depend on the size of the bamboo tube and the requirement of the product.

### 3.4 Stripping

Stripping is the key to processing and basic skill of bamboo weaving. The width and thickness of the strips depend on products needed.

The common process of stripping is as described below,

Take a piece of split bamboo, cut the piece into three layers of even thickness with knife. Usually the layer nearest to the surface is the finest in quality and is green in colour, the middle and inner layers are comparatively rougher and yellow. Use the knife to make a horizontal carving on the surface of the layer at about 2cm from the top, the deepness of the snicks is equal to the thickness of the strip. Hold the top of the layer with one hand, use another hand to lift and pull off the strip. Repeat the above steps to make more strips.

A width fixing tool is used in fixed width stripping. It is composed of a working stool, wood frusta and two blades, while the blades form a 'v' angle and the distance between the bottom of the blades should be the desired width of the strip.

#### **4. Bleaching and dyeing**

##### **4.1. Bleaching**

Put the bamboo strips into hydrogen peroxide solutions (1:2), and boil for two hours. The strips will be degreased and the colour whitened. When boiling, the strips need to be divided and bundled together according to the layers from where they were peeled. The time of boiling can be adjusted according to different bamboo layers to be boiled, different thickness of the strips and the concentration of the solution.

##### **4.2 Dyeing**

The dyeing of weaving materials is forwarded by weaving technique because it is very difficult to achieve uniform colour on the surface of the finished product.

#### **5. Furniture**

Bamboos are widely used in furniture making. Bamboo furniture is light and cheap and has been in wide use in the southern provinces of China for thousands of years. Bamboo species that are traditionally employed in furniture making include *Phyllostachys heterocycla var pubescens*, *P. sulphurea*, *Dendrocalamus latiflours* and *Psodosasa amabilis*. Bamboo furniture is light-weighted, elegant, natural, and reasonable priced. It is welcomed by a great number of people all over the world. Because bamboo is ideal substitute for wood, bamboo furniture development contributes to forest and environment protection.

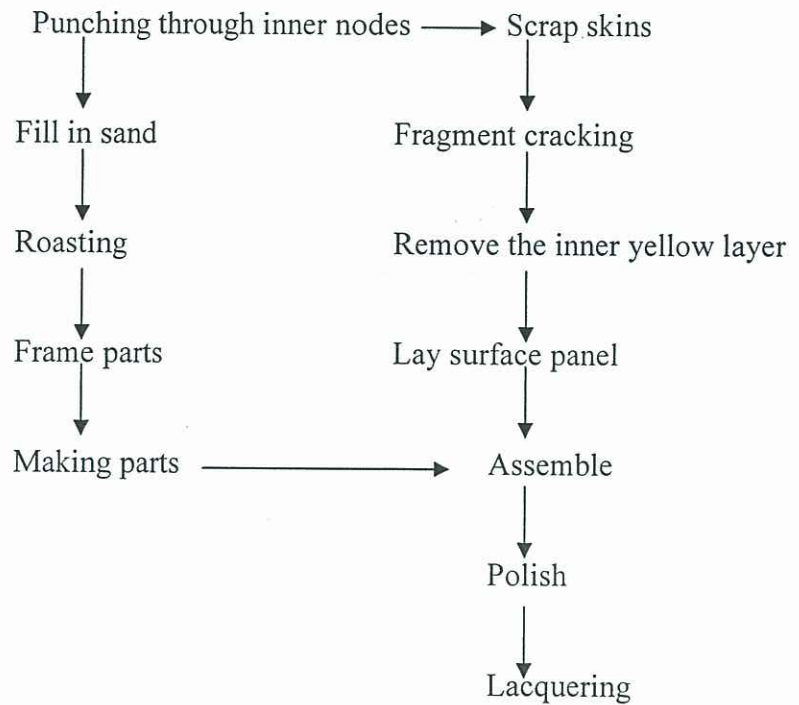
Furniture making involves several steps such as node smoothening, scorching, bending, steaming, drilling, growing and assembling. Bamboo is used to make many traditional furniture items such as tables, chairs, beds, cupboards and tea tables. Many of them are now in demand for use in places such as hotels and restaurants. The manufacturing process for bamboo furniture can be divided into 3 major segments (1) raw material selection, (2) treatment and (3) drying.



The following is the flow chart of processing steps for making bamboo furniture.

Harvesting → Preservation → Air drying or Kiln drying → Raw cutting →

Remove nodes



### 5.1 Raw Material Selection

The design and processing technologies of traditional Chinese bamboo furniture are very different from those of the western style bamboo furniture (in the Philippines and in Columbia), and so is the raw material selection. Chinese traditional bamboo furniture usually requires grooves to be cut on the bamboo tube to make a collective bent mortise. This technology can join parts of furniture closely and form a strong framework.

In selecting raw materials for Chinese traditional bamboo furniture, the following principles are important:

- Select middle or small size bamboo species, with straight and upright stem, small tapering, and smooth nodes, for furniture framework processing, the bamboo culms should have comparatively thicker walls and be tenacious enough, the age of the selected bamboo should be 3-4 years.
- For surface panels of chairs and tables, bamboo species with long internodes are usually selected.
- For making supporting poles culm with short internodes and thick wall is suitable.

The season of bamboo harvesting is usually in winter, because there are rarely any diseases or pest found in the culms harvested during this season.

## 5.2 Treatment

Bamboo is a natural material that deteriorates with time. It is prone to attack by insects and fungi and has to be treated to prevent from degradation. There are several methods of treating bamboo. They are grouped into the traditional or non-chemical and the chemical methods.

- Traditional or non-chemical methods are (1) soaking (2) curing (3) smoking.

The chemical methods are divided into non-pressure methods and pressure methods.

- Non pressure methods are (1) Fumigation (2) Spraying or brushing (3) Steeping/ Butt treatment (4) Hot and Cold press (5) Boucherie process.

Pressure methods are (1) Full-Cell-Process (2) Empty-Cell-Process (3) High pressure sap displacement.

## 5.3 Drying

This is the processing of removing some of the moisture or water to improve the serviceability and suitability of bamboo. The objectives of seasoning are to obtain uniform moisture content suitable for its intended use and to minimize defects such as checking and collapse. Air drying is the process of drying bamboo by exposing it to the natural element either in the open or under shed. This is the most economic method of drying bamboo since it does not require investment on equipment other than those needed to handle and transport the materials. Drying is dependent on the prevailing temperature, relative humidity, and natural movement of the atmospheric air to which it is exposed.



## 6. Recommendation

Bamboo which is one of the abundant forest resources has a very great impact on the economy of the rural population in Myanmar. Some bamboo species such as *Bambusa polymorpha*, *Cephalostachyum pergracile*, *Bambusa tulda*, *Dendrocalamus longispathus* and *D. brandisii* are used for making handicrafts and furniture parts.

Bamboo has been found to be used by the rural communities for many years and the procedure for traditional use of bamboo has been handed from generation to generation by the rural communities in our country. They make weaving, variety of shapes of baskets, container for paddy storage, mats, chicken baskets, bamboo hat, bamboo novelties and build house.

Bamboo raw materials are obtained from the public forests as well as the reserved forests. Now bamboo parquet manufacturing factory and chopstick industry have started in Myanmar. The development of private enterprise and earning of foreign exchange should be encouraged and the Forest Department concerned should take care of the management of the natural bamboo forests.

Based on the training and observation in China, the following are recommended for handicraft and furniture production.

1. Bamboo sector should be development based on science and technology.
2. The private enterprise and cottage industries should be encouraged so as to get the maximum benefits out of the natural bamboo forest of Myanmar.
3. The institutional capacity building and human resource development programme in the rural area should be strengthened.
4. Proper training is an urgent need for the development of handicraft and furniture production.
5. Formulation and improvement of preferential polices and strategies for attracting local business people and absorbing foreign investment.

## **7. Conclusion**

Export and exported earnings from bamboo based products are beneficial in China as the systematic management of bamboo forests and bamboo plantation are absolutely successful. Myanmar should also try to undertake management and utilization of bamboo efficiently for foreign earning. Promotion of bamboo cannot be carried out by the Forest Department alone: the private enterprise and cottage industries should be given a chance and operate together to contribute the benefit out of a natural bamboo forest of Myanmar. Moreover, the extension of advanced technology to the people played an important role in bamboo business.



Agenda for the International Training Workshop on Bamboo Handicraft -  
Bamboo Weaving and Furniture Processing Technologies

October 10-31, 2005, Sichuan Province, China

**10 (Monday)**

Morning: Opening Ceremony; Discussion on the Agenda; visit the Qingshen China Bamboo Art City

Afternoon: Indoor course

1. The handicraft of bamboo weaving and the industry development in Qingshen County, Sichuan Province, China
2. Plain weaving and its technologies

**11 (Tuesday)**

Indoor lecture and demonstration: Plain weaving technologies

**12 (Wednesday)**

Indoor lecture and demonstration: Traditional bamboo furniture processing technologies

**13 (Thursday)**

Indoor lecture and demonstration: Raw bamboo furniture processing technologies

**14 (Friday)**

Indoor lecture and demonstration: Dimensional bamboo weaving technologies

**15 (Saturday)**

Morning: Visit to traditional bamboo furniture processing base; laminated bamboo furniture factory

Afternoon:

1. Leaders from the Sichuan Provincial Handicraft and Art Society, Education Society, and the government representatives from Meishan City and Qingshen County meet with participants
2. Art performances

**16 (Sunday)**

Morning: Visit bamboo wall decorative mat weaving base (village)

Afternoon: Visit bamboo packaging production base (village)

**17 (Monday)**

Touring to Leshan, visit to the Grand Buddha

**18-23 (Tuesday – Sunday)**



Practices (participants will be divided into groups)

*Note: the afternoon of 22 will be arranged for a sodality with staff members of the Qingshen China Bamboo Art City*

#### 24 (Monday)

Morning: visit to fine plain weaving factory; view bamboo handicraft training course for primary school students

Afternoon: Indoor lecture – Introduction to the China Bamboo Industry Development – present situation and main experiences

#### 25 (Tuesday)

Touring: Qingshen – Ya'an Panda Protection Base - Tea-Horse Trail (Chamagudao)<sup>1</sup> – Ancient Towns – Pingle porcelain coat weaving production base – Qingshen (06:00-18:00)

#### 26-28 (Wednesday – Friday)

Practices (participants will be divided into groups)

#### 29 (Saturday)

Shopping in Chengdu; touring to Wangjianglou Park (bamboo scenery)

#### 30 (Sunday)

Morning: Evaluation of the workshop

Afternoon: Closing ceremony

#### 31 (Monday)

Departure

***Note: Daily schedule for work and rest***

7:30-8:20	Breakfast
8:30-10:00	Lecture or practices
10:00-10:20	Break
10:30-12:00	Lecture or practice
12:00-13:30	Lunch
13:30-15:00	Lecture or practice
15:00-15:20	Break
15:30-17:30	Lecture or practice
18:00-19:00	Dinner

<sup>1</sup> the ancient trade route connecting Tibet, provinces of Yunnan and Sichuan, had been the important path along which tea, horse and traditional Chinese medicine were transported and traded.

International Training Workshop on Bamboo Handicraft-Bamboo Weaving and Furniture Processing Technologies, October 10-31, 2005, Sichuan Province, China

### List of Participants

#### Brazil

Jaime Goncalves de Almeida  
 Departamento de Projeto  
 Faculdade de Arquitetura e Urbanismo  
 Universidade de Brasilia  
 L2 Norte Residencial, ICC Norte  
 Campus Universitario  
 70990-900 Brasilia (DF)  
 Tel: 55(61) 3307.2044/3307 2044/ 3368 4409 (home)  
 Email: cantoar@unb.br

#### Indonesia

Martinus Tapilatu  
 House -ji.karang Panjang No.28 Rt 004/Rw 09 Ambon Tel.0911343268  
 Office - Indonesia Bussines Centre  
 Jl.am. Sangaji No.68 Ambon.97126.indonesia

#### Indonesia

Josias Inuhan Tel 0911-352462  
 House -jl.mr.j.latuhary, Rt 001/Rw 03 Ambon. Tel <0911> 3304957  
 Office -regional Office Of Industry And Trade Of Maluku Province  
 Jl.a.m Sangaji No.66. Ambon-97126. Inonesia  
 Tel : <0911>353219. 353484, 348717  
 Fax: <0911> 353219

#### Myanmar

Ni Ni Thin  
 Junior Assistant  
 Myanma Timber Enterprises  
 A (203), No (8) Saw Mill Quater, Hlaing Township , Yangon  
 Tel: 951-664457,681856,681858,534795  
 Fax: 951:664336  
 Email: friygn@mptmail.net.mm  
 Email: TEAKNET@mptmail.net.mm

#### Myanmar

Min Thu  
 Junior Asistant  
 Myanmar Timber Enterprises  
 Room(4), Offices's Avenue, Furniture Factory, Timber Department, Ahlone Township, Yangon,  
 Myanmar

Tel: 951-534795  
Fax: 951-664336  
Email: friygn@mptmail.net.mm  
Email: TEAKNET@mptmail.net.mm

### **Nepal**

Vijay Prasad Kesari  
Program Manager  
RES-Nepal  
P.O Box 14193  
Kathmandu  
Email: resnepal@wlink.com.np  
Website: www.res.org.np

### **Nigeria**

Abimbola Adesanya Ogunwusi  
RAW MATERIALS RESEARCH&DEV.COUNCIL, ABUJA.  
PLOT 427 AGUYI IRONSISTREET, MAITAMA, P.M.B. 232,GARKI, ABUJA.  
Post Code : 234  
NIGERIA  
Tel: +234-09-4137416-7  
Fax: +234-09-4136084  
Email: oguns59@yahoo.co.uk

### **Peru**

Josefina Takahashi  
Av.Parque Sur 129.Of.301,Urb.Corpac  
San Isidro  
Lima  
Peru  
Tel:+511224 1177  
Fax:+511226 3062  
Email: abustenta@terra.com.pe  
Philippine  
Romualdo L.STA ANA

### **Philippine**

Romualdo L.Sta.Ana  
Vp&Member, Board of Directors  
Philippine Bamboo Foundation , INC  
#3 Edna St,BF Homes,Almanza, Las Pifias City, Philippines  
Tel: (632)8024437; Fax: (632)8014846; CP: (0918)9133600  
E-Mail: romisantana@yahoo.com





## CERTIFICATE OF ACHIEVEMENT

October 30, 2005

This Certificate is issued in appreciation that

**Ni Ni Thin**

has successfully completed the *International Training Workshop on Bamboo Handicraft - Bamboo Weaving and Furniture Processing Technologies*, October 10-31, 2005, Sichuan Province, P. R. China,

Organized by:

International Network for Bamboo and Rattan  
(INBAR)

Qingshen China Bamboo Art City  
Sichuan Province, P. R. China

*IR Huxee*

Director General



Board Chairman and Master of Bamboo Art



## CERTIFICATE OF ACHIEVEMENT

October 30, 2005

This Certificate is issued in appreciation that

**Min Thu**

has successfully completed the *International Training Workshop on Bamboo Handicraft - Bamboo Weaving and Furniture Processing Technologies*, October 10-31, 2005, Sichuan Province, P. R. China,

Organized by:

International Network for Bamboo and Rattan  
(INBAR)

Qingshen China Bamboo Art City  
Sichuan Province, P. R. China

*IR Hunkel*

Director General



Board Chairman and Master of Bamboo Art

### Bamboo Furniture





# Bamboo Weaving

