

## Overview of Bamboos (Tre nua) in Vietnam

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## General Information of Bamboos

- Bamboos are a group of woody perennial evergreen plants in the true grass
- Family: Poaceae; Subfamily: Bambusoideae
- 91 genera & about 1,000 species; some are giant bamboos
- About 14 million ha of bamboo forests
- Found in tropical regions (Asia, northern Australia, Africa & Americas)
- Fastest growing (up to 3-4 ft/day or 1.5-2.0 in/hr)
- High economic & cultural significance in Asia where they are used extensively in gardens, as a building material as well as a food source.

## Bamboos in Vietnam

- More than 464 species were founded in VN which belong into 15 genera as *Bambusa*, *Dendrocalamus*, *Phyllostachys*, *Sasa*, *Oxyanthera*, *Thyrsostachys*, *Melanocalamus*, *Tetragonocalamus*, *Dinochloa*, *Cephalostachyum*, *Gigantochloa*, *Schizostachyum*, *Teinostachyum*, *Arundinaria*, *Neohouzeua* (Camus & Lecomte (1912 – 1923)) .
- The list includes 194 Bamboo species of 26 genera were preliminarily identified & named (Nguyen & Tran, 2007).
- There are 14 endemic species in Vietnam, 3 species were found endangered: *Chimonobambusa quadrangularis*; *Phyllostachys nigra*; *Phyllostachys bambusoides*.
- Vietnam is a country which have a greatest reserve of the bamboo materials in the world (Table below).

## Bamboo distribution in Vietnam

Location	Total land area (million ha)	Bamboos (million ha)	Mixed bamboo (million ha)
Whole country	<b>32.894</b>	<b>0.789</b>	<b>0.702</b>
Eastern North	6.746	0.176	0.132
Western North	3.572	0.057	0.049
Song Hong Plains	1.266	-	-
Central Northern	5.130	0.172	0.099
Central Plains	3.301	0.027	0.002
Central Highland	4.464	0.210	0.138
Eastern Southern	4.447	0.144	0.279

Source: National Statistics, 2001

## Roles of Bamboos in Economy

- Bamboo timber can be harvested every year after 3-7 years
- With 10-30% annual increase in biomass versus 2-5% for trees, bamboo can yield 20 times more timber than trees on the same area.
- Bamboo can be selectively harvested annually & regenerates without replanting.



## Bamboo industry

The bamboo industry is a traditional industry in Vietnam which was established nearly one thousand years ago and specific characteristics of Vietnam culture contain the "Bamboo and rattan culture".



### Domestic consumption & exporting

- Furniture: chair, arm chair, bench, stool, table, parasol, bar & counter stools, cabinet, shelves, screen, etc.
- Handicrafts: basket, box, pot, tray, mat, plecemat, plate, bowl, gifts, carpet, tube, architectural works, etc.
- Construction materials: flooring, pole, pillar, etc.
- Raw materials for industry: paper, food processing, toothpick.
- Mainly exported to Taiwan, Japan, Hongkong, Thailand, Russia, Germany, France, Hungary, etc.



### Roles of Bamboos in Improving Local Income

- Good income for rural/poor people – e.g. collection & sale of bamboo shoots are a small business.
- Can provide regular annual household income if well managed.
- Providing as vegetable, firewood, fence and materials to make many equipments for their household consumption. Bamboo was called “wood for poor people”



### Roles of Bamboos in cultural protection

- Traditional culture of most village communities in VN: feed the people, make houses, grace & shade their environment, provide musical instruments, cooking & eating utensils, furniture, hunting weapons, ceremonial artifacts, carrying & storage baskets, lampshades, ropes & strings, roof tiles, hats & hundreds of other practical & spiritual uses.
- Accordingly, the people show great reverence for this wonderful plant
- Famous stories of using bamboo poles/pillars as armaments to protect the country
- For centuries, bamboos have been closely connected in the daily life of the Vietnam people

### Roles of Bamboos in Ecological restoration

- Bamboos are native species
- Natural mixed forests (bamboos mixed with forest trees)
- Preventing soil erosion especially in critical area (near streams, watersheds, restoring soil, providing sweet edible shoots and removing toxins from contaminated soil); called “natural water control barrier”
- It produces greater biomass and 30% more oxygen than a hardwood forest on the same area.
- Bamboo can restore degraded lands.

### Exploitation/Harvest in Vietnam

- Over exploitation and unsustainable harvest in natural bamboo forests (e.g. harvest in wrong season) leading to degraded bamboo forests (e.g. small stem diameter, short stem and few number of stems per clump).
- Better management and exploitation in bamboo plantations, but establishment techniques still not well developed



### Some popular bamboo species in Vietnam

- *Bambusa stenostachya* (tre gai)
- *Dendrocalamus barbatus* (Luong Thanh Hoa)
- *Schizostachyum funghomii* McClure (Nua La To)
- *Phyllostachys sulphurea* (Truc Can Cau) and *Phyllostachys heterocycla* (Truc Sao)

## *Bambusa stenostachya* (tre gai)

- An important bamboo for construction timber
- Tre gai is a clumping bamboo.
- Much of the tre gai bamboo comes from villages in Central Vietnam.
- The tops of tre gai bamboo are used by chopstick factories, & the long, thick bottom poles usually ended up as scrap.
- Uses these sturdy, hard poles (10-14' long, 3"-4" diameter) to build houses.
- First harvest 5 years after planting, harvesting rotation from every 3 years
- Bamboo clumps will grow new shoots for as many as 75 years.
- When bamboo poles reach their peak strength and hardness, villagers in Central Vietnam harvest before quality declines



## *Dendrocalamus barbatus* (Luong Thanh Hoa)

- Total plantation area 60,000 ha in Thanh Hoa (about 70 million stems); 15,000 ha in northern mountainous region
- Soil condition: feralit, pH = 4.6-7, not too steep slope
- Rain fall: high rainfall, not too many hot days.
- First harvest 5 years after planting, harvesting rotation from every 2 to 4 years depending on using purposes.
- Planting follow clump; each clump is about 20-40 stems; 5-8 new shoots every year
- Chemical analyses show 54% cellulose, 22.4% lignin and 18.8% Pentosan. Good for making paper, poles, pillars for house/coal mine construction, slat that attractive both domestic and exporting market
- MARD Guidelines for Bamboo (Luong) planting and harvesting techniques, No 04 TCN 21-2000 dated 21 Jan 2000.

## *Schizostachyum funghomii* McClure (Nua La To)

- Natural distribution in northern Vietnam, Central Highlands & middle of Vietnam as pure species or mixed with forest trees
- About 30% of total Bamboo areas in Vietnam
- First harvest 3-4 years old; harvest rotation every 3 years
- Estimated yield 1.5-2.5 tons/ha in year 3 & higher after year 4
- Materials for handicrafts, paper factories, baskets, construction, chopsticks, firewood, etc

## *Phyllostachys sulphurea* (Truc Can Cau) and *Phyllostachys heterocycla* (Truc Sao)

- 2 kinds: yellow & green color
- Distribution in NMR (Cao Bang, Thai Nguyen, Bac Kan, Lao Cai, Tuyen Quang, Ha Giang) from sea level to 400-1100 m
- Materials for making tables/chairs, handicrafts
- Shoots are edible
- First harvest 4 years after planting; harvest rotation every 2 years
- Products exported including 8,000 sets of tables & chairs, & sporting equipment (100,000 fishing rods, 70,000 ski stocks and 93,000 poles for pole vault) per year

## Potential for Developing Bamboo Plantations by Governments

- Bamboos are the most important NTFP species in VN
- Bamboos are among the main species for the 5 MHRP & priority species for plantation in NMR & Centre northern.
- Up to 2010, Vietnam plans to produce 2-2.5 million tons of paper/ year, of which 30% of raw materials is from bamboos (i.e. 3-4 million tons/year; 5-6 kg of bamboos = 1 kg of paper pulp)
- Source of raw materials for products e.g. chopstick, poles, slat, etc.
- Source of bamboo shoots for consumption & export
- Research priority focusing on planting (seedlings, etc), harvesting & advanced processing techniques.
- Propagation by cutting, tissue culture work in Vietnam, recently carried out, results in multi-shoot stage obtained in some species.

## Bamboos into CDM

- GO/NGOs funding for developing handicraft villages, especially for women groups

- Introduce into CDF in many places through extension program, but not success everywhere (poor institution, market information/low price, investment, technical problems, poor management).

For example, Bat Do bamboo planting program is became a national program during 2002-2004 through provincial extension centres; support from government including technical training on planting & harvesting methods, seedling; a thousand hectare was planted by many thousand households in NMR, but local people stop to look after their Bat Do bamboo.



## Market potential

- Not enough raw materials for Bamboo industry, such as production of bed mats, exp. 02 joint-venture companies in Cao Bang are facing lack of raw materials
- Most provinces have a paper factory so always high demand for raw materials from bamboos
- Many hundreds of export companies in VN have a capability to produce different kinds of unique and luxurious items from small ones as a toothpick to big ones as an architectural work, etc.

## Conclusions

- Bamboo is an important product of NTFPs in VN
- High values of economic (rapidly renewable resource grown & harvest for many years, local income), social-culture & environmental aspects
- Make an excellent institute for wood in furniture manufacturing, because it grows much more rapidly, increased use of bamboo will reduce the demands on slower-growing timber forests
- VN government have policies into bamboo development especially to encourage local communities involving, but still not yet meet results as expected.

## Conclusion (continue)

- Promoting bamboo harvesting, manufacturing & building in an ecologically safe manner for the ecosystems & the peoples.
- Need to be fully utilize the unique properties of bamboo, the strongest & fastest growing plant on the planet. This is aimed at substituting the wood materials in order to protect & reserve the forest, especially tropical forest with an optimum capability of fighting against the gradual heat of the earth day by day./.

Thank you very much for your attend!

