

# Current Japan bamboo industries and domestic organizations, and the condition of international relationship



**12<sup>th</sup> World Bamboo Congress, 2024,  
Taiwan**

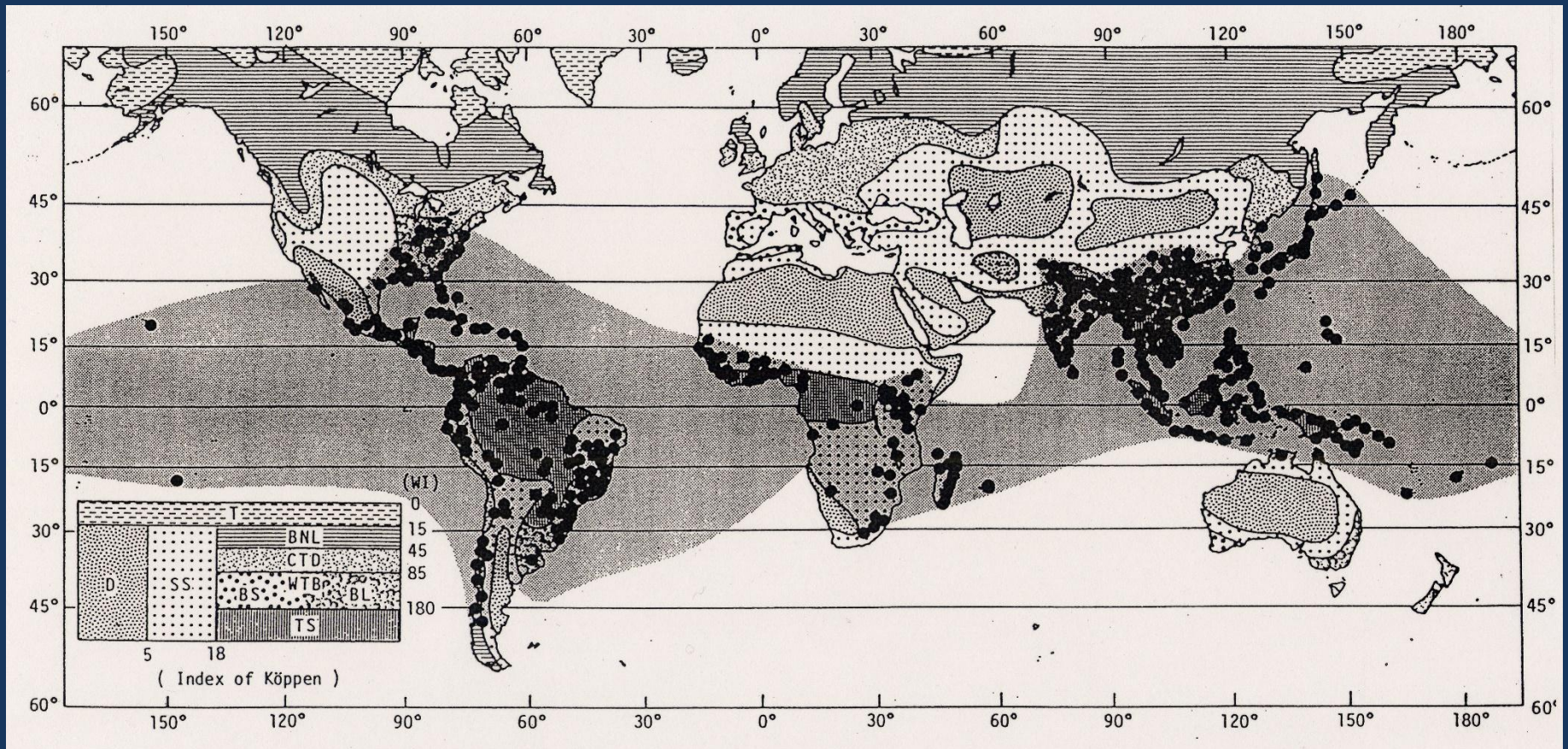
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# Bamboo in Japan and people's life

- Japan has a **long intimate relationship with bamboo** and has developed a “bamboo culture”.
- The **knowledge, experience, and technology** have gathered global attention.
- In the second half of the 20<sup>th</sup> century, Japanese traditional bamboo processing technology was **exported to SE Asian countries** under the support of the Japanese government.
- However, in recent years, Japan has not embraced internationalization.
- On the other hand, nowadays, on the world scale, activities emphasizing bamboo as a **crucial resource** have increased.
- Here, I want to introduce **Japan's present condition** of bamboo industries and the **activities of representative bamboo domestic organizations** for considering the new possibility of bamboo sectors in Japan to contribute to the world.

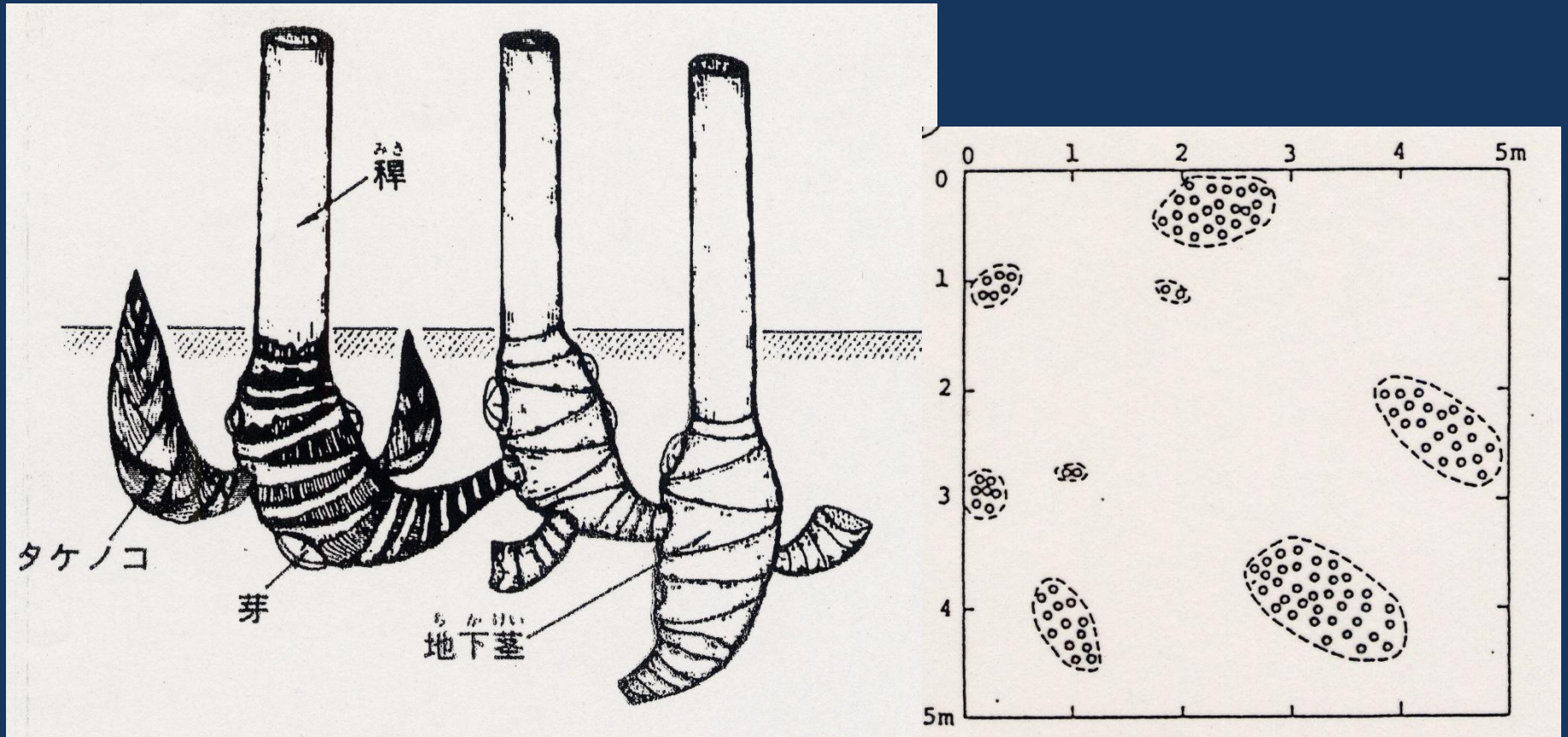


## Bamboo distribution map by Watanabe (1987)

Japan is the most northern area of bamboo distribution in the world.

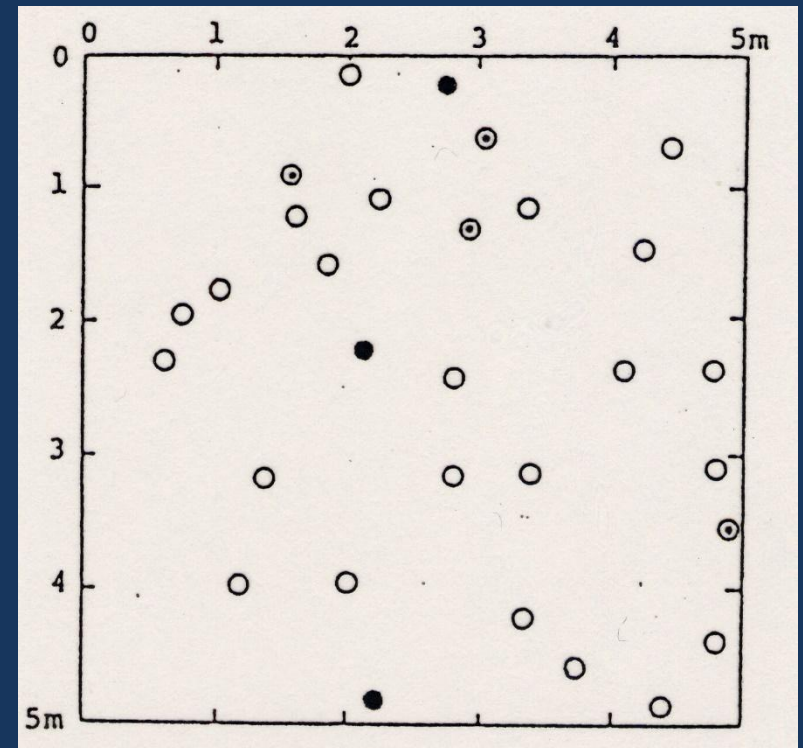
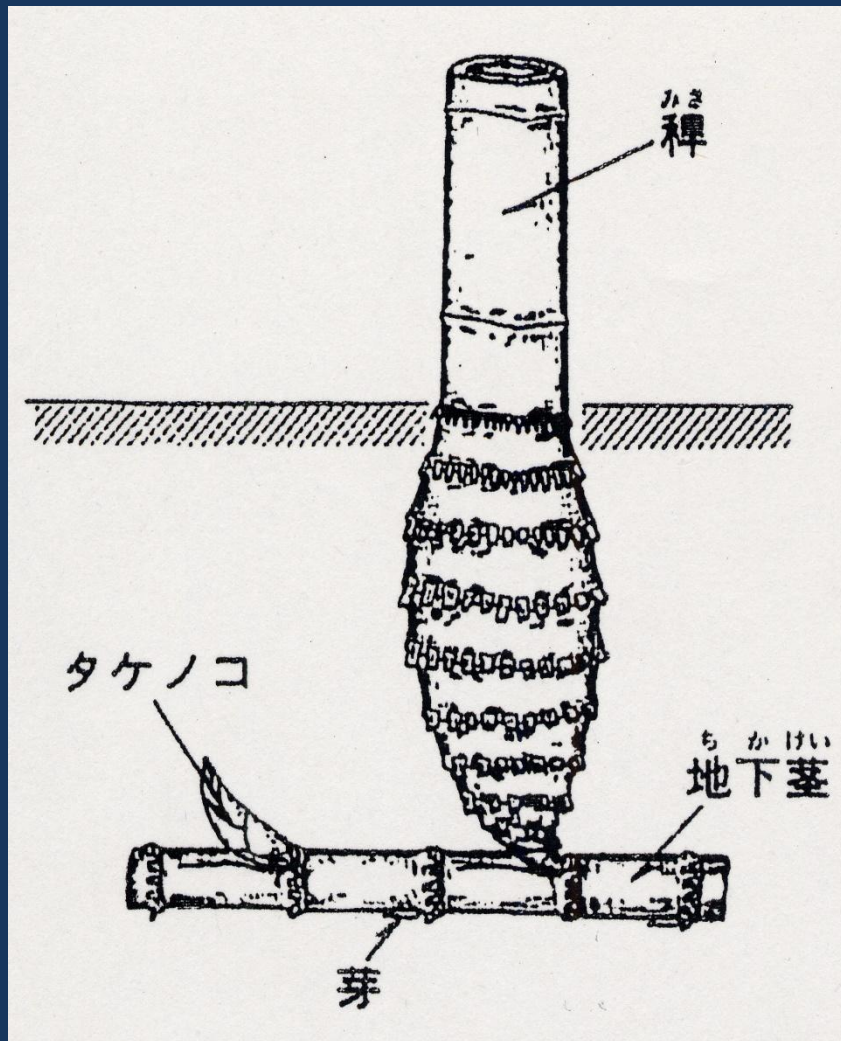
Most of the bamboo in Japan has a monopodial style with long rhizome.

# Bamboo with clump style in tropical area: Sympodial style





# Bamboo with long rhizome style in temperate area: Monopodial style



# Well-managed bamboo forests in Kyoto, Japan (left: timber forest, right: bamboo shoot forest)



# Traditional relationships of Japanese with bamboo like other bamboo countries

- Bamboo resources, one of the most important plant resources of Japan developed excellent **Japanese culture** like tea ceremony, flower arrangement (Ikebana), and so on
- For Japan's culture bamboo is also indispensable, as shown through old myths and so on.
- For the effective production of bamboo resources, the Japanese developed very **intensive management technology**, that is applied in many countries now.
- In Japan, bamboo forests were recognized as important vegetation **against the earthquake** because of their **rhizome networks**.
- But the Japanese **lost these important relationships**.
- Bamboo industries in Japan were found in **Kyoto and Beppu**.
- Especially in Beppu, there is an old record that bamboo craftsmen villages were there in the 5<sup>th</sup> century.



# Sacred plants: bamboo



# Traditional bamboo timber processing against insects attack



# Bamboo use for the core of walls of traditional Japanese house



# Bamboo weavings in Japan

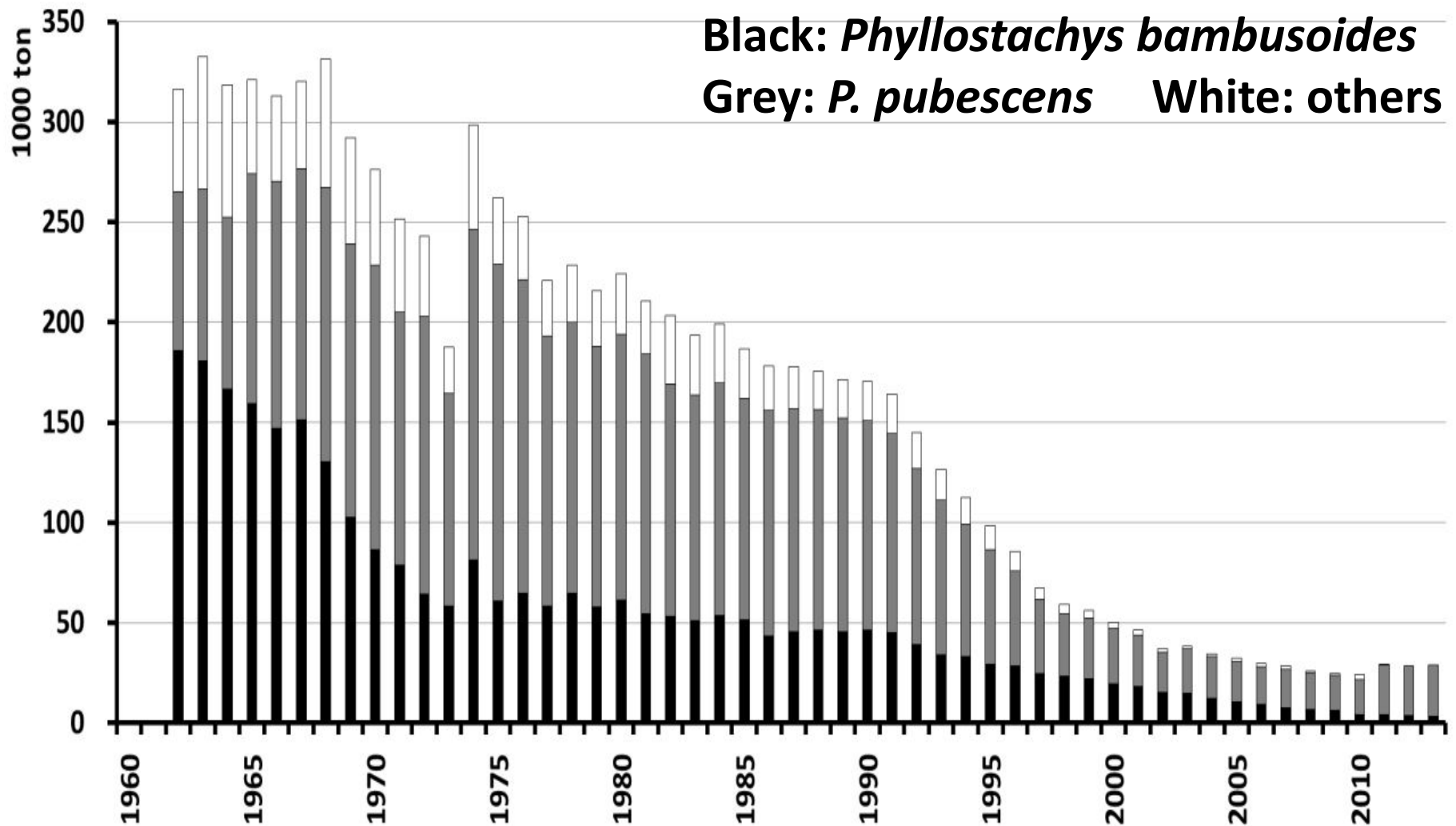


# Without bamboo tea ceremony is impossible to carry



# Gregarious bamboo flowering and influence to the Japan bamboo industries

- In the 1960s there was a **gregarious flowering of *Phyllostachys bambusoides* (Madake)**. This period was also a dramatic change in the economic structure of Japan. Madake recovered in ten years after flowering but the structure of the bamboo timber supply system also dramatically changed in this decade.
- During this decade Japanese bamboo industries started to **import bamboo timber** from other countries and never tried to manage the recovered domestic Madake forests. Japanese bamboo industries **could not wait for the recovery of Madake forests**.
- At present, bamboo production has dwindled significantly, with production over the past decade being only around 1.2 million bundles (30,000 tons), which is **approximately 9% of its peak**.
- The number of **bamboo harvesters has also decreased**, making the supply of bamboo resources increasingly difficult. At the same time, although the bamboo forest area in Japan has shown a slight increase, the **managed bamboo forest area continues to decline**.
- Currently, there are efforts to revitalize the domestic bamboo industry in Japan, but **there aren't many organizations that can**

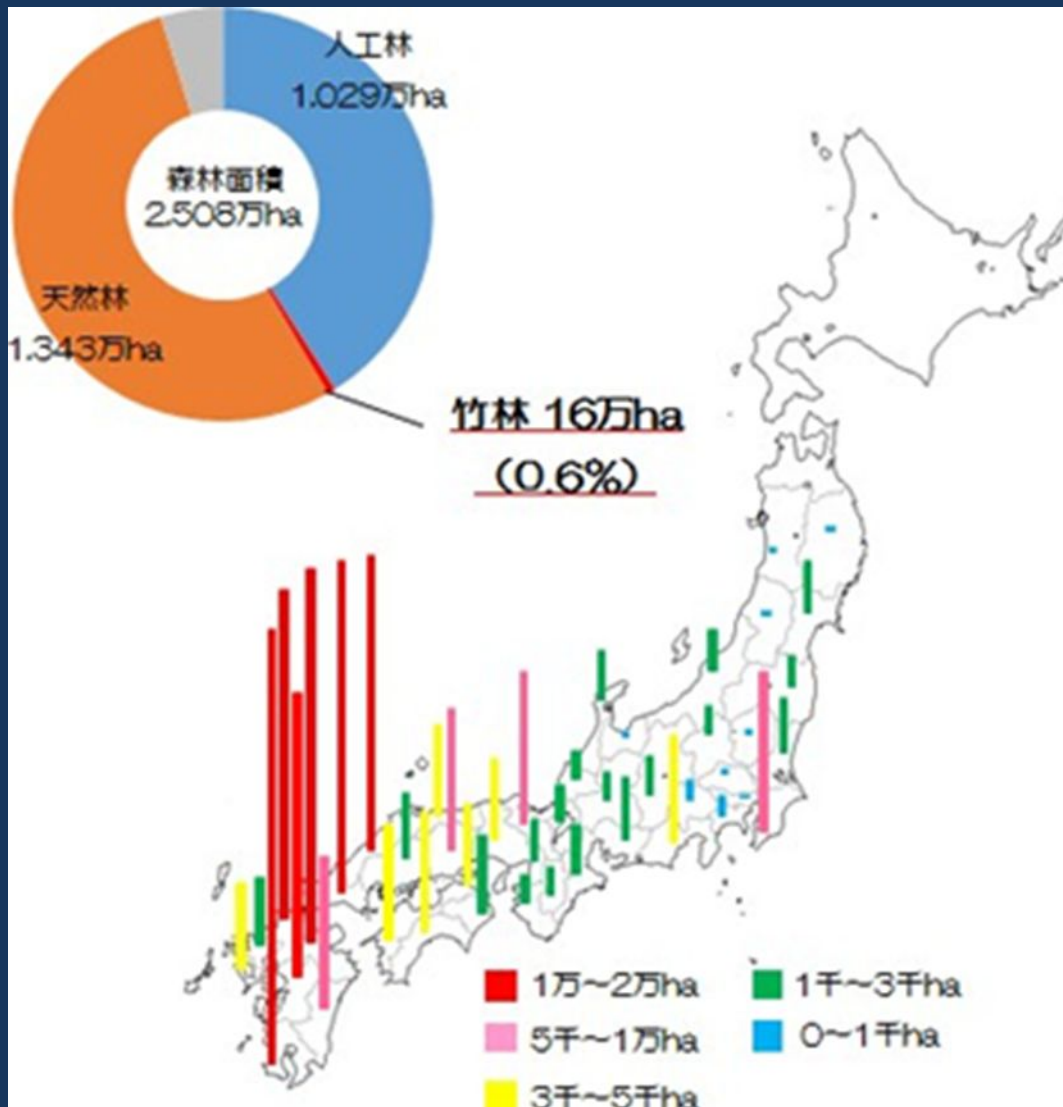


## Statistical change of bamboo timber production in

**Japan (Japan Forestry Agency 2015)**

Decrease between 1969 to 1973 occurred  
 by the flowering of *P. bambusoides*.

# Bamboo forests distribution in Japan (Japan Forest Agency, 2012)



- The rate of bamboo forest area in Japan is only **0.6% of total forest area**.
- Most of them are distributed **in south-western areas** of Japan.
- Nowadays, many bamboo forests are losing management and **degraded bamboo forests are increasing**.





**Deterioration of  
bamboo forest by the  
loss of management**

# Japan Bamboo Association (JBA)



- In ancient times, it is said that, at least the south-western area of Japan, there were many craftsmen at least one in each village.
- In the modern time, **local bamboo craftsmen societies** were established in each area.
- JBA was **established in 1960 as the first nationwide organization**, by uniting the previously existing regional organizations within Japan's bamboo industry. The late **Dr. Koichiro Ueda played a significant role** in the establishment of this organization.
- JBA's membership consists of **individuals and organizations related to the bamboo industry**, including those involved in bamboo timber production, bamboo shoot cultivation, and landscape architecture.
- At the time of its founding, bamboo was a crucial resource in Japan, and many organizations related to traditional bamboo industries were members.
- JBA holds the annual "National Bamboo Conference", which is in its 64th year, and faces the issue of having little change in its membership composition.

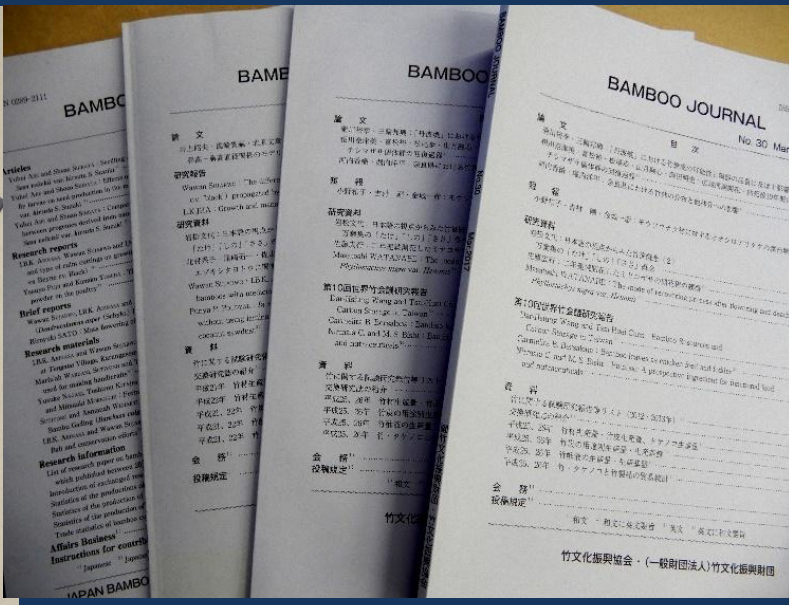
# Japan Bamboo Society (JBS)



- JBS was established in Kyoto **in 1976 by the late Dr. Ueda**.
- JBS primarily **consists of individuals** who have deep connections to traditional culture related to bamboo and bamboo enthusiasts. They focus on the allure, characteristics, and utility of bamboo, which has been traditionally used in various ways.
- The organization facilitates **information exchange** on topics such as resource utilization, cultural uses, disaster prevention applications, and environmental mitigation functions of bamboo.
- **Supported by traditional cultural organizations** such as those associated with tea ceremonies and flower arrangements, as well as regional businesses mainly in Kyoto, with 2,400 members now.
- JBS holds an annual general meeting, often accompanied by **information exchange sessions**. Every year, JBS **donates bamboo plants to elementary and junior high schools** across Japan, striving to promote the effective educational use of bamboo.
- JBS also publishes three to four **newsletters** annually, with a total of 153 issues published to date. Additionally, it publishes the **research journal "Bamboo Journal"** which has reached 33 volumes. This



JBS annual general meeting



Journal published by JBS



**JBS information exchange session**



**JBS World Bamboo day event**



**Bamboo donation to schools**



**Promotion of bamboo education**

# New bamboo uses for coming generation (1)

- **Timbers:**

Uses as laminated bamboo expecting the effects of **antibacterial functions**.

**Deodorant activities** mainly by using the part of culm surface are also important use.



**Traditional but new ideas  
of bamboo greenhouse  
resistant to disaster**



**Bamboo temples of glasses with  
high value as the hygienic products**

# New bamboo uses for coming generation (2)

- **Charcoal and vinegar:**

**Versatile materials** like soil improvement, deodorizers, healing materials, cosmetics, materials for audio equipment, desiccant, etc. including industrial uses as charcoal powder. All of them are effective for our **health after COVID-19.**





**New speaker products**  
using bamboo fiber, charcoal and plant opal from bamboo leaves  
by Panasonic (left) and bamboo charcoal regional products (right)  
These examples are gentle to environment.



# New bamboo uses for coming generation (3)

- **Fibers:** A lot of uses are there.

**coarse level:** road pavement chips, compost, etc.

**fine level:** paper & pulp, cloth, food, reinforcement of industrial products, etc.

**nanoparticle level:** bio-plastic, bio-glass, etc.

All of these materials are keeping the **anti-bacterial**



Bamboo peg  
**stronger than**  
**iron nails** by high  
temperature and  
pressure  
processing

# Machines developed to produce fine bamboo powder (nano scale)



# New bamboo uses for coming generation (4)

- **Extracts for the sanitary:**

Traditional uses as **wrapping** materials of leaves & sheaths and bamboo leaves **tea and alcohol**

For New uses as medicines, cosmetics, etc.

expecting the **antibacterial effects**

Extracts from bamboo green (leaves and culm) have high effectivity **against influenza** is

clear already.



# Safety of bamboo for foods and fodder

- Bamboo shoots as very **safe foods** covered by sheath including rich dietary fibers and high nutritional values etc.
- The high value of bamboo shoots has already been proved by Dr Nirmala Chongtham for example.
- **Careful processing of bamboo shoots** will bring to healthy food lives to the people.
- Not only as traditional use in many countries but also as new use we can find **new bamboo evaluation**.
- For example, in Japan, there are many trials to use **nano-scale bamboo powder** for cattle and poultry. These trials show the possibility of getting safe foods such as eggs and chicken.
- The detailed analysis of the value of **bamboo leaves as fodder** materials is not shown enough but traditionally Indian people understand its high value.

# Bamboo shoot as Japanese food material



# Bamboo leaf use for wrapping



# Use of bamboo fibers for foods





# New bamboo uses in coming generation (5)

- **Energy:**

A lot of kinds of trials are carried out like as **charcoal** (popular products in), **pellet** (10% higher calorie than wood), mixed burning of **chips** in electric power plants, use for bio-gas, and materials for bio-ethanol.

We need to consider more **effective energy use** of bamboo for a **healthier living environment**.

On the other hand, bamboo is a very **important energy resource**, that should be focused.

In some countries, the government already understands this importance and has been continuing the development.

This kind of understanding is **not enough in Japan**.

# Production and use of bamboo pellet





# New bamboo uses for coming generation (6)

- **Environmental capital resources**

Bamboo is recognized as helping to maintain **favorable environmental conditions** and supporting specific **biodiversity**.

In Japan, much research to evaluate these properties toward **environmental capital resumption** in bamboo forest management is promoted.

- **bamboo culm used for the health**

Japan has a health law called **green bamboo trampling**.



# Bamboo garden in Kyoto can heal people



# Japanese craftsmen's artificial talent is evaluate worldwide



Installation by Chikuunsai Tanabe



Work of Kei Hasegawa



Work of Hideaki Hosokawa

# Efforts toward system development for new effective bamboo resources usage in Japan

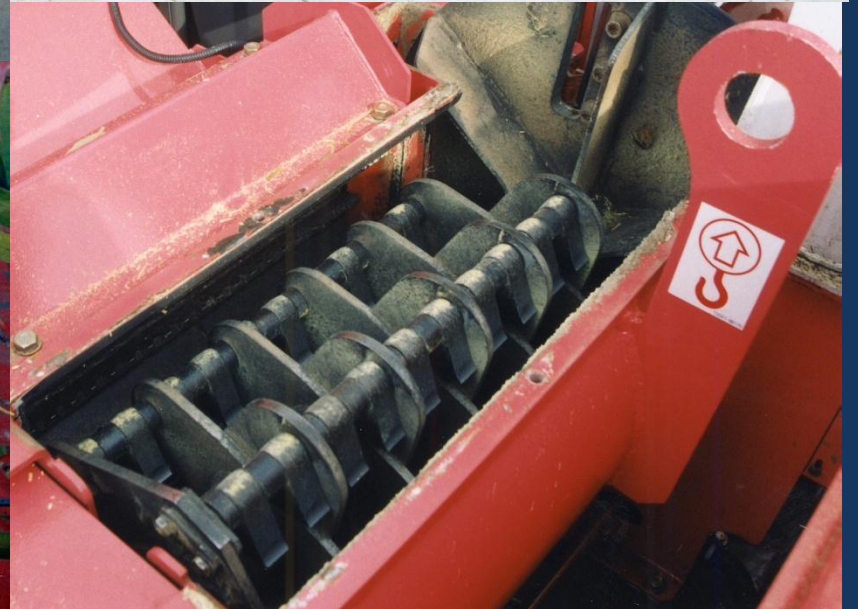
- According to the encouragement of the central government, many local governments are **trying to use bamboo as a new resource**.
- As typical **local government** and **private companies**, there are some examples like
  - **Mifune Town** of Kumamoto pref. (bamboo registration system), **Haruno Town** of Kochi pref. (production of bamboo plywood), **Miyazu** of Kyoto pref. (trial to produce the bamboo ethanol), **Chuetsu Pulp & Paper Co.** (production of high-quality bamboo paper), etc..
- The central government also continues the **effort to develop new harvesting machines and related methods** based on research at the National Research Institute of Forestry.

# Grapple developed for effective bamboo culm harvest





# Bamboo chipper developed aiming at the effective use of bamboo resources by KOMATSU Corp.



# Plant for new bamboo resource use in Miyazu, Kyoto, Japan



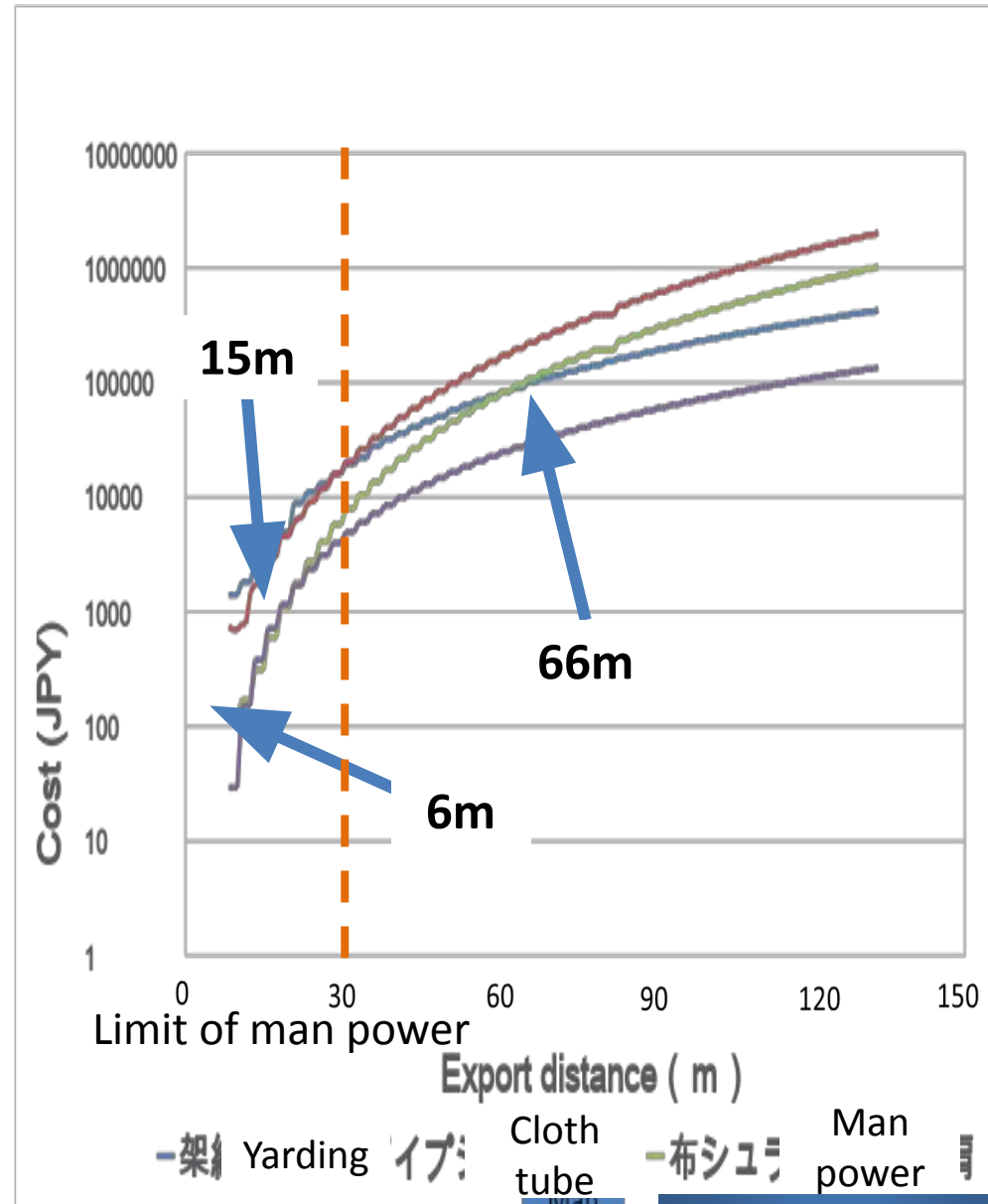
# Relationship between export carrying distance and cost

## Results of simulation

Export distance	Method
0m~6m	Man power
6m~15m	Cloth tube
15m~30m	Man power
30m~66m	Cloth tube
66m~m	Yarding

Assumption: export in constant pace

Cloth tube is suitable in the distance of 30m~66m  
Yarding is better in case of more than 66m



# International co-operations by Japanese organizations

- As representative organizations for international exchange and activities from the perspective of forest resources and environmental conservation, the **Japan International Cooperation Agency (JICA)** and the **Japan International Forestry Promotion and Cooperation Center (JIFPRO)** conduct international activities.
- However, these activities raise several issues, including the fact that these activities **rarely seek information sources or technology providers from abroad.**
- Furthermore, **very few Japanese individuals actively participate in international activities** like the WBO, and only two Bamboo Ambassadors.
- Aside from them, only a few internationally renowned bamboo professionals such as Dr. Masatoshi Watanabe, who has received the Ueda Award from the WBO, and some skillful bamboo artists are known.
- Despite repeated requests, the **Ministry of Foreign Affairs**

# Japan's Lagging Bamboo International Exchange

- Unfortunately, Japanese technology is rarely included in the recent development of developing countries.
- Currently Japan's overseas assistance highlights **bamboo processing technology**, but it **often fails to make significant international contributions**.
- In the case of the assistance provided by **JICA in the Tripura state of India** that has been ongoing for more than ten years. Now this project is entering its second phase.
- The first phase involved creating **bamboo plantations** aiming at increasing local income.
- However, they **don't recognize local traditional techniques**.
- Additionally, the growth and resource volume of the created bamboo plantations were not sufficient, maybe because of the **lack of indigenous bamboo species characteristics**.
- On the other hand, the Indian government must have been steadily promoting the bamboo industry **as a national policy especially in the Northeastern states of India for over 20 years**. Their technology is

# International Activity of JICA in Tripura, India



**Bamboo plantation by the JICA support:  
growth condition is not good**

**Quality of bamboo crafts made under the Indian government-lead is higher than the that of JICA because of the lack of understanding of Tripura**



# Conclusion: The Potential and Expectations of Bamboo in Japan

- The current Japanese **young generation is losing their knowledge of bamboo**.
- However, now, when they seriously **consider global environmental issues** like climate change and plastic waste, **they are starting to recognize the importance of bamboo**. They are looking at bamboo as a potential solution to energy problems. They also view bamboo as a sustainable alternative to petroleum-based products.
- Among the younger generation, there is a **growing trend of entrepreneurs considering the use of bamboo** in their ventures. Many of the products include the production of bamboo-based **plastics for space shuttles, car bodies** using bamboo nanofibers, **car interiors, and steering wheels** due to its strong antibacterial properties, new **beverages and additive-free laundry detergent** using bamboo extracts, and **bamboo powder as livestock feed**, among many others.
- These examples are **expected to be introduced to the world soon**.
- To consider how Japan can contribute to international exchanges through bamboo there is a **need to propose new uses for bamboo and promote its sustainable production within society**. This

# Recent bamboo products in Japan

Latest bamboo products in Japan car interiors and steering wheels due to its strong antibacterial properties

Latest bamboo products in Japan additive-free laundry detergent using bamboo extract







**THANK YOU FOR YOUR  
ATTENTION !**