Summary of Bamboo Treatment and Drying

Purpose

The purpose of We Do Bamboo procedure is to provide simple, practical instructions and standardize the process of post-harvest treatment, preservation and storage guidelines for bamboo culms/poles/splits, in order to enhance bamboo products longevity, strength and resilience.

Why We Do Bamboo treats bamboo culms/poles/slats

To increase shelf-life of bamboo using appropriate treatment that is sustainable and eco-friendly. Following these parameters such as

- Species,
- Wall thickness,
- Culm length, and
- Harvesting period.

Our basic principles of bamboo treatment and storage

Helps us to understand handling of bamboo during and after treatment:

- **Treatability**: Bamboo, particularly round culms/poles are challenging to treat because of their impermeable outer walls, hard nodes, and septa that prevent chemical retention. Split, slivers and slats bamboo are easy to treat.
- **Shrinkage:** As moisture levels decrease throughout the bamboo culm's radial and tangential axes, the cell wall thickens and cell diameter decreases

Chemical treatment of bamboo culms/poles

We use this method after considering the following factors.

- Bamboo species and its state (fresh or dry)
- Intended application (e,g, exposure to the atmospheric elements, ground contact, undercover works etc)
- The quantity to be treated (small or big scales)
- Available time and
- Potential reasons for degradation (e.g. biotic and abiotic variables).

Our treatment procedure is based on post–harvest bamboo and farm management

We only harvest bamboo culms/poles during the low-sugar content season.

Why?

- The culm's sugar content changes according to the season.
- During the growing season, the culm decreases starch in parenchyma cells to generate new shoots. As a result, starch levels are lowered.
- Culms are harvested during the subsequent dry season.

Our Procedure:

- We harvest bamboo culms/poles during the short dry season **(January-March)** and longer dry season **(June-October),** when sugar content is often low.

Efficacy:

- Bamboo culms with higher sugar content are more sensitive to insect and fungal attacks.
- Reduced sugar levels could increase the lifespan of bamboo culms.

To ensure full treatment of bamboo we use borate-based treatment

- Chemical preservation of bamboo culms/poles ensures longer life of their structures and outperforms non-chemical methods.

Description:

- We Soak fresh, dried, and split culms in an open-tank treatment that provides a simple yet effective protection. To use this process, we immerse the bamboo in a chemical bath with borate solutions, hydrogen peroxide and water.

Our treatment Procedure

- We have established a treatment site,well constructed for the purpose of treating bamboo culms/poles/ (Offloading area, slivering/slicing area, treatment pool or tank, trough area, vertical stacking area, ventilate shade area).
- We harvest fresh or nearly fresh culms/poles (up to seven days after harvesting), else the cell walls will begin to close.
- We cut in size and puncture the nodal diaphragm or drill a hole from the outside close to the node for the round culms/poles to allow the chemical to enter the internode.
- We use this depending with culms/poles to be treated; Formula: We measure Borax oxide and Boric acid in the ratio of 1:1.5 in 20 litres of water (1kg of Boric acid: 1.5kg of Borax Oxide per 20liters of water) or (50kg of Boric Acid: 75kg of Borax oxide for 700litres) = concentration of 5% solution.
- We prepare the Borate solution and mix with warm water to dissolve completely.
- We pour the solution into the treatment pool.

- We immerse the bamboo culms/poles/splits in the solution until the solution has penetrated thoroughly. .
- The solution penetrates culms/poles parts through diffusion to the ends, nodes, and outside wall.
- We cover the treatment pool to avoid direct sunlight and manage the temperatures.
- Split bamboo takes about a week (7) days, whereas round culms take 10-14 days in treatment.
- We prepare vertical stacking for a week after treatment to allow the borate to permeate into the culms/poles and ensure the culms/poles are upright and do not have ground contact.
- Followed by an additional two weeks to season the bamboo to reach the desired moisture of 15-20%.
- We mix 2kg of Kerosene with 0.5kg of actellic after treatment to eliminate any remaining starch.
- We fumigate the bamboo storage facility before horizontal stacking of bamboo culms/poles.
- We keep the culms/poles/slats in a cool dry place to avoid cracking and discoloration.
- Once the culms/poles /slats are fully dried culms/poles are used for different purposes..
- We clean the tank every 4-8 weeks.

How we store treated and non-treated bamboo

- To prevent fungal and termite attacks, we keep bamboo culms away from soil contact. Place them on a tarpaulin and raised platform.

We also keenly on implementing the following activities;

- We have constructed a roof to cover treated and non- treated culms/poles against rains and direct sunlight.
- Bamboo culm is stored in a well-ventilated roof.
- We fumigate the storage area to ensure free from borers attacks
- Stack them with distance splitters to facilitate ventilation.
- Remove all affected culms/poles from the storage area.
- We differentiate between the base and middle stems.
- After three months, attain 20% moisture content in the bamboo
- We sort and classify preserved culms/poles based on size, diameter, and quality.
- We store treated and not-treated culms/poles horizontally in racks
- We place culms/poles above ground, with intervals between culms to allow ventilation.

We Do Bamboo foundation