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BAMBOO TREATMENT FACILITY

The arrival of over 700,000 Rohingya refugees in late 2017 created an immediate need for large amounts of readily accessible and durable shelter materials. Due to its abundance in Bangladesh, bamboo was the most logical solution for building shelters and community structures in the camps. Over 24 million sticks of bamboo have been used by humanitarian agencies during the Rohingya response. Due to the urgent humanitarian needs, structures have been built using untreated bamboo and poles in direct contact with the ground, creating the perfect conditions for pests and rot. Extensive pest damage can already be seen throughout the camps, particularly in poles harvested while still immature or during the monsoon season (which are particularly attractive to pests).

Treating bamboo increases its lifespan from a little as 6 months to 3 years, potentially up to 10 years depending on conditions. The IOM Bamboo Treatment facility was established in June 2019, and with optimal funding and supplies the facility has the capacity to treat over 60,000 bamboo poles per month. The treatment process described here utilizes a solution of Borax and Boric acid mixed in water which is filtered and reused, avoiding the need to dispose and minimizing environmental impact.

These chemicals have properties that deter pests, improve fire resistance and help the material to avoid rot and decay. The scale of the Rohingya crisis response has dictated the size of the facility and it is currently the largest of its kind in the humanitarian world. IOM works with the Bangladesh Forest Research Institute and other national parties to promote sustainability in bamboo forestry and ensure that the facility functions in harmony with other state programmes.

Quality Control

Good quality products come from quality inputs. For our bamboo poles, this starts with specifying the species, size, dimensions and maturity that are suitable for construction.

Cleaning

Selected poles are measured and cut to final length before the outsides are cleaned by removing excess branch material. Cleaning allows better absorption of the treatment solution and also helps to create a more uniform outside surface for easier use in construction. Working the material by hand also allows for a closer inspection of the material.

Drilling nodes

By drilling holes in the nodes (diaphragm) of the bamboo, we expose the inner portion of the plant's vascular tissue while preserving the incredible strength of the material. This also increases the rate at which the treatment solution soaks into the poles.

Soaking

The most critical part of the process, soaking, starts by filling an empty tank with poles and then pumping in a solution of 7% Borax and Boric acid. After 7-9 days of soaking, the fluid is pumped into a control tank so the poles can be easily removed and workers avoid contact with the solution. At this point, the solution is tested for multiple variables, filtered and balanced to the correct percentage of Borates.

Drying

Controlled drying starts with draining the initial fluid from the tissue in our vertical drying racks. After 12-24 hours in the vertical racks, the material is moved to horizontal drying racks. The racks offer a shaded environment for storing the poles off the ground and with proper ventilation. Drying in this way reduces cracking, reduces the weight of poles and helps to achieve the ideal moisture content for construction.

Final Application

The final treated material is used in a number of applications within the camps. These include family shelters like the ones pictured here, with each block in the image containing 3-6 family units. The treated poles are used in conjunction with robust foundations and improved roofing to create an overall more durable product. Other uses include community structures, such as mosques, which can also be used as emergency community shelters during severe weather events.

Jalil Mia, a 48-year-old Rohingya Refugee, living in camp 25, Ali khali.

Jalil Mia, along with his 5 family members received support under the Transitional Shelter Assistance programme recently. He was very excited about the materials received, especially the treated borak.

"Now my shelter is stronger and lasts longer because we are using treated bamboo and we do not have to worry about pest attack now"

Treatment takes place in a systematic process at the Bamboo Treatment Facility in Nhila, Teknaf. In addition to its own shelter activities, IOM supplies treated bamboo to its partners for their operations.

Hasan Ali, a 58-year-old host community member from Nhila, support his family household of nine by working as a site cleaner at the BTF.

In previous jobs, Hasan had to take 2 or 3 days off to physically recover after each day worked. At the BTF he works five days a week and is taking every opportunity to learn more about sustainable bamboo practices.

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