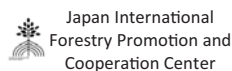
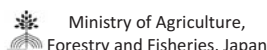


# INNOVATIVE METHOD FOR TROPICAL COASTAL FOREST DEVELOPMENT IN SANDY BEACHES IN THE PHILIPPINES



## Background

The Philippines being located along the typhoon belt of the Pacific, is frequented by an average of 20 storms per year, where 5 are destructive. Mangroves, being known as an effective mitigation and protection measure against damages caused by tidal waves and tsunamis from huge typhoons. In this experiment, we developed a method for afforestation of coastal forests on sandy beaches where mangroves do not grow. The new method was developed during the last three years at the Municipality of Tanauan, Leyte Province, Philippines.

## Challenges so far

The conventional planting method uses regular pot seedlings. Due to its cost, it seems that watering is done only once right after planting. This is because of the extremely harsh growing conditions for trees, such as high temperature, dryness, low nutrient soil, salty sea breeze, etc. that are found on sandy beaches. In reality planting in these sandy beaches results to extremely low survival rates.



Figure 1. Experimental Site located in the Municipality of Tanauan, Leyte, Philippines

## Results acquired

The graph shows the different survival rates of *Millettia pinnata* (Bani) under various methods of planting. In the experiment, a special pot called M-Star Container, ordinary planting pot, M-star container + coconut husk as mulch + cocopeat in soil, and lastly, ordinary pot + coconut husk as mulch + cocopeat in soil. Comparing the results of Bani between the use of the M-star container and ordinary pot the results were sufficiently effective. Using coconut husks as mulch and mixing cocopeat into the soil was very effective. Planting Bani in ordinary pots recorded a 15% survival rate in this environment while planting Bani in ordinary pots with help of coconut husk and cocopeat recorded a much higher rate of survival at 78%. On the other hand, using M-star container as a substitute for ordinary pots yield higher rates of survival. Seedlings in M-star containers recorded a 40% survival rate while seedlings in M-star containers with the combination of cocopeat in the soil and coconut husk as mulch yielded the highest survival rate in a year with 88% survival. We have also tested other tree species such as *Terminalia catappa* (Talisay), *Hibiscus tillaceus* (Malobago or Malubago) and *Casuarina equisetifolia* (Agoho), and the same effect have been experienced in almost the same way.



Figure 2. Coco-peat, 3. Japanese Researcher (left) measuring the temperature of the soil and 4. Studying the root growth of *Millettia pinnata* (Bani) raised in M-star container

## Key Materials

In this experiment, coconut husks were used as a mulch which are inexpensive and relatively easy to obtain especially in tropical beaches. Also, the fibers inside the coconut husks also known as coco-peat was mixed with the soil where the seedlings were sown to. Watering was only done once right after planting.

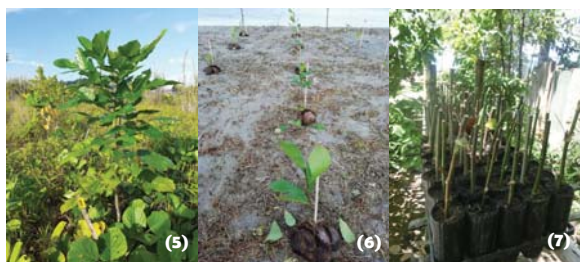


Figure 5. *Millettia pinnata* (Bani), 6. *Terminalia Catappa* (Talisay) and 7. Cuttings of *Hibiscus tillaceus* (Malobago) in M-star container

With special thanks to the supporting and implementing agencies:



In support to the Sustainable Development Goals:



## Survival Rate of *Millettia pinnata* (Bani)

Date of Planting: November 7, 2019  
Date of Monitoring: November 14, 2020 (One year after planting)  
Place: Barangay Bislig, Tanauan, Leyte

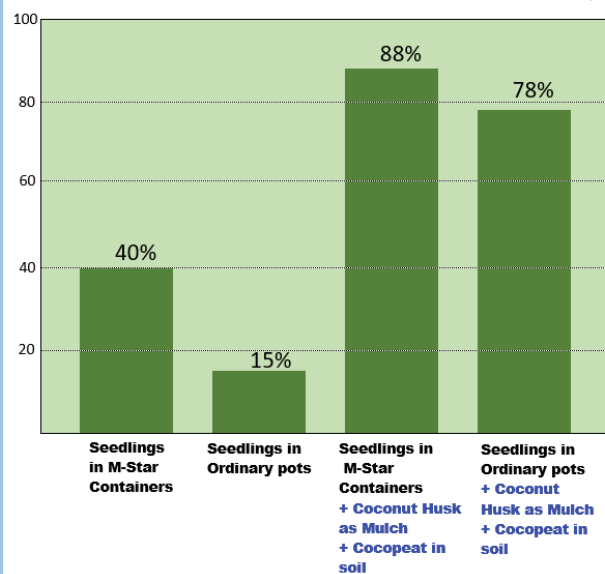


Figure 8. Survival rate of *Millettia pinnata* (Bani) under different containers and with the application of coconut husk and cocopeat