Innovative Conservation of Wetland Resources with Rhizophora mucronata Nursery

Sukkwai, Kasidet (School: Suratpittaya School)
Inkaew, Chidchanok (School: Suratpitaya School)
Namwongnao, Pattadon (School: Suratpitaya School)

Mangrove forest provides unique ecosystem and nursery for aquatic animals, along with sediment trapping and coastal erosion prevention. Since deforestation has been a major problem for mangroves in many countries, various methods have been used in mangrove reforestation to compensate the lost forest areas. However, most conventional methods for reforestation fail to protect the seedlings from sea waves, resulting in low survival rates. Other limitations include high cost and harmful effects related to chemicals and corrosion. This study aims to create a practical but inexpensive nursery structure, simultaneously protecting the mangrove seedlings from the waves and providing nutrient for the seedlings. The structure, called Mangrove Nursery, was produced from wastepaper, cement, and burned rice husks (3:1.5:2 v/v/v). It was created into a cone shape, with larger base than top part, to accommodate wave protection. Enriched soil mixture was added to the Mangrove nursery to provide rich nutrients. We found that the young mangrove seedlings could grow faster inside the nursery, as evidenced by higher numbers of leaves, wider trunk's circumference, and higher tree heights, compared to the seedlings planted by the conventional methods. Most importantly, the survival rate of the young mangrove seedlings was 100%, as opposed to only 15-30% survival rate found with the conventional methods. According to the rate of mass disappearance, the nursery was predicted to gradually decompose into non-harmful compositions. Therefore, our invention significantly helps mangrove reforestation, and provides efficient protection against waves and better environment for plant growth and adaptation.

Awards Won:
U.S. Agency for International Development: USAID Science for Development First Place Award of $5,000.