



COASTAL REHABILITATION BY MELALEUCA FENCES

Background

Kien Giang Province has 205 km of coastline and it is estimated that at least 25% of this coastline is badly eroded. This shoreline has more than 5,000 ha of mangrove forests, forming a thin green line of salt-tolerant vegetation that uniquely buffers and protects valuable farming lands from rising seas and storm damage. This tacit coastal defence is threatened by global climate change, as predicted rises in sea levels take effect.

In the wet season South-West winds blow from the sea towards the land and this pushes waves towards the dykes which cause general erosion and breaches of the dykes. In these seasons silt is deposited along the coastline. In the dry season the North-West winds blow from the land towards the sea. At this time some of the silt deposited along the coastline moves out to sea.

It is difficult to establish mangroves in areas of high erosion. 50% of plantings along the coast line have failed.

Reasons for these failures are poor quality seedlings and a lack of protection of seedlings from mechanical forces during the critical initial stages of growth following planting.



Our approach

The project has developed a series of measures to protect the seedlings and increase the likelihood of successful mangrove replating.

Protection methods

Wave break fence: In Kien Giang the foreshore is shallow and the waves are not high or strong, nonetheless they are causing high rates of erosion with up to 30m being eroded annually from some areas. One major impediment to the successful establishment of mangroves is wave action. In order to reduce this, a wave break fence has been developed.

The main function of the wave break fence is to reduce wave action. The design also traps some silt at the end of the wet season and excludes rubbish from foreshore.

Silt trap fence: Another impediment to successful establishment of mangroves is the change in silt deposition with seasons. The silt can smother mangroves in the wet season and will be eroded from small root systems of seedlings during the dry season.



Production of mangrove seedlings

Mangrove seeds are best planted directly into the planting site. Seeds use their stored energy reserves in early growth and will slow down as they adjust to new conditions if transplanted. For logistical reasons it is often necessary to grow seedlings in nurseries. Seeds or seedlings are planted in 15 cm diameter plastic bags filled with mud and silt from the intertidal zone and nursery house should be placed under the mangrove tree along the coast. So the seedlings are watered by the high tide and get strong under the shadow of the mangrove canopy. After 3–6 months (depending on the species) the seedlings are strong enough to be planted.



Benefits

- Similar to the natural protective mangrove forest, melaleuca fences reduce wave energy and thus play a vital role in reducing coastal erosion.
- The melaleuca fences protect seedlings and increase survival through the critical period following planting.
- Melaleuca fences promote the natural regeneration of mangrove forest seedlings.
- Mangrove restoration using fences were found to enhance the biodiversity of benthic species.
- The cost of building the melaleuca fence is much less than for barriers using other materials such as bamboo, rock or concrete.
- Using melaleuca for fence construction will increase the value of melaleuca and encourage local farmers to maintain melaleuca plantations.
- Mangrove restoration in high erosion areas is greatly facilitated by the use of protective melaleuca fences. Practical methods for fence establishment have been developed. The next step is to test how these techniques can be scaled up for mangrove forest restoration, coastal rehabilitation and shoreline erosion control.

Upscaling

After 3 years, with the support of Australian and German funded program, nearly 3 ha of mangrove were successfully planted with the support of melaleuca fences. Nowadays, this mangrove belt does not only cover 1 km of the coast but also keep expanding further to the sea. Vietnam government has modified the fence designs for creating mudflat and mangrove planting. In 2015 và 2016, 418 ha and planning 194 ha mangrove planting in 2017.