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Coastal vegetation structure and resistance southern coast of Sri Lanka in the mitigation of tsunami impacts

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The present study is an attempt to investigate the relationship between coastal vegetation structure and its capacity to resist wave energy. Thickness of tsunami sand deposits at Rekawa, Kalametiya and Kirinda were measured and used as indicators of degree of resistance by vegetation against tsunami wave that passed through the mangrove vegetation at the respective localities. Belt transects of 30 -40 m long which were laid perpendicular to the lagoon/estuarine shoreline and parallel to each other and at 30-70 m distance from the shoreline were used to collect data on vegetation structure and each was divided into 10 m ×10 m plots. The locations of each tree, sapling, seedling and stump of trees and also girth and height of trees were measured. Moreover thickness of the sand deposited by tsunami wave was taken by digging 1` × 1` pits on the ground. Thus pits were made in each plot along seaward to landward gradient.

The results suggest that mangroves and *Pandanus odoratissimus* communities of closely spaced trees with widely branching canopies, trees with intermediate diameter and greater forest width provide the greatest resistance against tsunami by reducing inundation distance inundation depth and flow velocity of tsunami waves, which explained that coastal forests lessen damage to property and reduce loss of life. Results further explained that wide crowns with prolific branching of *Avicennia marina* and *P. odoratissimus* with stilt/ prop roots and dense foliage exhibit the greatest drag resistance against the tsunami wave.

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