

Efficacy of traditional practice of mangrove cultivation in Negombo estuary, Sri Lanka

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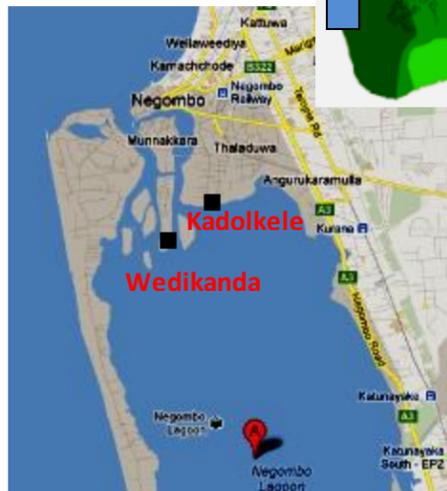
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Objective - Determine the efficacy of traditional mangrove cultivation in Negombo estuary, Sri Lanka, in terms of net primary productivity (NPP) and capacity of carbon sequestration by the cultivated mangroves.

Study sites

Kadolkele

A relatively undisturbed mangrove area total extent is about 13.5 ha.



Negombo estuary
(7° 6'-7° 12'N and 79° 40'-79° 53'E)



Wedikanda

A cultivated mangrove area from which mangroves are harvested selectively for 'brush park' construction. Total extent is 9.5 ha.



"Brush Park" at Negombo estuary



Collecting mangrove litter from traps



Recording annual girth increment

Annual litterfall data of Kadolkele and Wedikanda (40, 10x10 study plots)

Annual woody increment of above and belowground of Kadolkele and Wedikanda (40, 10x10 study plots)

Chemical analysis for determine TOC in wood, leaves and

NPP Annual total organic carbon (TOC) accumulation rate

	Kadolkele	Wedikanda
Vegetation structural complexity	42.33	22.48
NPP (g m ⁻² y ⁻¹)	2401.29 ±18.46	2122 ±16.44
No statistical difference (p<0.05)		
Annual TOC accumulation		
- Wood (g m ⁻² y ⁻¹)	682.80 ±7.51	602.88 ±6.93
- Root (g m ⁻² y ⁻¹)	152.91 ±1.94	131.62 ±2.23
- Leaves (g m ⁻² y ⁻¹)	396.46 ±4.97	382.01 ±6.44
Total (g m ⁻² y ⁻¹)	1232.17 ±9.23	1116.51 ±12.63
No statistical difference (p<0.05)		
Annual carbon sequestration capacity by Negombo estuarine mangroves (t ha ⁻¹ y ⁻¹)	11.74	

INDIGENOUS WISDOM

Mangrove stands cultivated by fishermen are as efficient as the natural stands in terms of

- Net primary productivity (above-ground)
- Carbon sequestration

Average annual carbon sequestration (11.74 t ha⁻¹ y⁻¹) by Negombo estuarine mangroves is equivalent to the amount of carbon as CO₂ by combustion of 19209 liters of diesel or 22043 liters of gasoline by motor vehicles .

