

Summary

Since information on the structural and functional properties of mangrove communities in Sri Lanka is scanty, their ecological value has not been adequately understood. In the present study an attempt is made to investigate the structural and functional properties of mangrove areas in Negombo lagoon, Sri Lanka.

Litter production, litter decomposition, Carbon:Nitrogen (C/N) ratio, and fungi associated with decomposing leaves were investigated two locations in the lagoon. Those were Munnakera which is an Island where mangroves are cultivated by fisherman engaged in "brush pile" fishery a traditionally practiced fish aggregating fishing method for which mangrove twigs and branches are used, and Kadolkella which is an area where mangrove stand has been over-exploited by "brush pile" fisherman. Studies were carried out from 1990 to 1992.

The average annual litter production rates in Munnakkare and Kadolkelle were 7 and 4 tons per hectare respectively. The litter decomposition rates in dry spell and wet spell were .05 and 0.68 g/m²/day respectively. Carbon/nitrogen ratio ranged from 50 to 275 in dry season and from 20 to 75 in wet season.

The litterfall in the study sites were significantly correlated ($p < 0.1$) with the rainfall with time lag of two months. The litter fall in the study sites showed significant correlation neither with other climatic factors such as wind speed and relative humidity nor with the soil and water salinity levels pH and nutrient levels in water. Higher litter production in Munnakkare than in Kadolkelle perhaps attribute to the species composition. In Munnakere, Rhizophora mucronata is the dominant species whereas mangales in Kadolkelle is dominated by Avecennia marina.

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Litter decomposition rates in areas which subjected to frequent tidal inundation (i.e water front areas) is greater than those in inland areas. In these areas where litter decomposition rates are high , predominant fungal species are Fusarium sp. Alternaria sp, and Aspergillus sp.

The leaves with higher nitrogen contents and lower C/N ratio had higher decomposition rates suggesting that difference in decomposition rates in various mangroves may be related to nitrogen content . There high litter decomposition rates were observed in R. mucronata zones.

Since "brush pile" fisherman in the northern part of Negombo lagoon cultivated R. mucronata which contribute greatly to the productivity in mangrove communities in the lagoon, this silviculturel activity has a positive effect on the productivity in the Negombo lagoon in addition to "brush pile" fishery. It could also be conducted that R. mucronata be given higher priority in selecting species for mangrove rehabilitation strategies through silviculture.