

Leaf litter decomposition and changes in leaf C:N ratio in the mangals of Negombo estuary

V. Pahalawattaarachchi and M.D. Amarasinghe

National Aquatic Resources Agency, Crow Island,  
Colombo 15

This study was carried out in the mangrove areas in Negombo lagoon, a basin estuary located on the west coast of Sri Lanka. Senescent *R. mucronata* leaves in 2 mm mesh bags placed in the innermost areas of a mangal in an island lost weight faster (7-14 days) than those were placed in the waterfront areas, which took 14-28 days to lose 50% of the initial weight. On contrary, litter in the 13 mm mesh bags lost half its weight within 3 days at water front, 7-14 days at middle area and 35-42 days in innermost site. In the dry season, decomposition was slower and more than 46 days were taken for 50% weight loss. *R. mucronata* leaf litter placed in the tanks filled with lagoon water took the longest time (41 days) for decomposition, further substantiating the effect of tides, soil moisture as well as the macro and micro organisms on the process.

Carbon (C) represented 42% and 29% of the dry weight of senescent leaves of *R. mucronata* in the wet and dry seasons respectively. During 96 days of decomposition 3/4 of this carbon was lost and 1/4 was transformed to particulate organic matter.

An increase in the nitrogen content (N) and a decrease in the carbon content were observed during the first 56 days of decomposition, indicating the nitrogen mobilization due to the microbial action. The remarkable decrease after 56 days may be due to the very low rainfall during this period. The nitrogen contribution to the ecosystem up to 56 days of the wet season was calculated to be  $1.76 \times 10^{-2}$  t/ha. The total increase of N in wet season however is as twice as that in the dry season.

The average C:N ratio of *R. mucronata* changed with decomposition from 199.7:1 to 69.98:1 in the dry season and from 60.97:1 to 16.06:1 in the wet season. The dietary requirement of protein for most animals is 16.5% of the dry weight of diet, which corresponds to a C:N intake of about 17.1. The detritus produced, particularly during the wet season therefore, is of immense importance to the detritus cycle in these coastal waters.