307

Variation of Natural Recruitments, Root Yield and Belowground Carbon Stocks between a Forest Gap and Uncut Forest in Rekawa Mangroves, Sri Lanka

Premathilake G.G.P.D.*, Ekanayake E.M.R.G.D.B. and Marappulige P.K.

Ocean University of Sri Lanka, Mattakkuliya, Sri Lanka
**priyapula@gmail.com*

Abstract

Researches are scanty for comparing the belowground biomasses and carbon stocks between man-made gaps and uncut areas of Sri Lankan mangrove forests. In order to reduce this study gap, a 6 years old forest gap and adjacent uncut forest area were selected from a Ceriopstagal stand (06o 02/ N and 80o 50/ E) in Rekawa Lagoon Sri Lanka and three 5 m x 5 m plots were sampledin each site for comparing the belowground root biomasses (obtained from two root cores: 60 cm deep and 15cm diameter, from each plot) and root carbon contents (determined by loss on ignition).

The uncut forest area had significantly higher tree (height above 150 cm) densities (1.0 ± 0.1 m^{-2}) than the gap (0.45 ± 0.3 m^{-2}) area (Mann-Whitney U Tests; $P<0.05$). The uncut forest had significantly higher fine and medium root dry weights (1260 ± 182 and 1166 ± 200 gm^{-2} respectively) over the gap (612.0 ± 114.0 and 597.8 ± 164.1 gm^{-2} respectively). The dry weights of coarse and total roots of the gap (4245 ± 452, 5454 ± 715gm^{-2} respectively) and the uncut forest (3664 ± 516, 6089 ± 884 gm^{-2} respectively) were not differed significantly (Two sample t-test, $p>0.05$).

The carbon contents of fine, medium, coarse and total roots between the gap (126.1 ± 18.2, 105.1 ± 19.5, 50.1 ± 8.6, 284.6 ± 38.1gm^{-2} respectively) and the uncut forest (107.4 ± 15.1, 95.8 ± 15.7, 41.7 ± 6.8, 244.5 ± 35.3 gm^{-2} respectively) were not differed significantly (Two sample t-test, $p>0.05$).

Unchanged belowground dry weight and hence the unaffected root carbon contents in the gap would imply growing of new roots in to the gap area from surrounding trees for absorbing nutrients from decaying stumps.

Keywords: Mangroves, Forest gaps, Carbon, Roots, Rekawa, Sri Lanka