

Enzyme activities related to litter decomposition in forests of different age and altitude in North East India

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Abstract

Cellulase, amylase and invertase activities were studied in extracts of different leaf litters selected from four different forest stands, two of each from low and higher altitudes. Enzyme activities were generally considerably higher in litter at the lower altitude than at the higher altitude. The age of the forest from which the litter was taken had no consistent effect on these enzyme activities. Cellulase and amylase activities showed a marked seasonal variation at both altitudes. Invertase activity was higher at the beginning of litter decomposition, whereas cellulase and amylase activities increased during litter decomposition. At the lower altitude, invertase activity was higher in herbaceous litter than tree litter. At the higher altitude, all activities were higher in angiosperm litter than in coniferous litter. Invertase activity correlated positively with soluble sugars in all of the litters, whereas cellulase activity had no significant relationship with cellulose content. Cellulase and amylase activities, but not invertase activity, were generally correlated significantly with numbers of fungi and bacteria.