

## Palatability and rates of degradation of some important leaf litters with two epigeic earthworms under controlled laboratory conditions

S Pattanayak

Raja N L Khan Women's College, India

Detritivore feeding guild and fauna mediated mobilization of energy of nutrient through leaf litter decomposition in natural ecosystem is of high significance. The ecological suitability of different leaf litter types in improving the biological diversity and micronutrient status in soil is not clearly understood which is very important for deciding the plant species to be used for afforestation practice. The present research work was done to study the feeding preference and colonization of two epigeic earthworms, *Perionyx excavatus* and *Lampito maruti* in the decomposing leaf litter of five locally important tree species, cashew, shal, mango, acacia and eucalyptus. The major nutrient and anti nutrient chemical parameters in these leaf litters were compared. Rates of degradation of the nutrient parameters of these leaf litters by the two species of epigeic earthworms in microcosms were also analysed. The results indicated that *P. excavatus* and *L. mauruti* exhibited maximum colonization and feeding preference for cashew and shal respectively whereas lowest colonization and feeding preference of both the test species were observed in case of eucalyptus. When antinutrient chemical parameters were compared, highest constitution of polyphenols and tannins were observed in case of eucalyptus ( $141.2 \pm 12.1$  and  $113.7 \pm 8.2$  mg/g) followed by acacia ( $130 \pm 14.5$  and  $110.7 \pm 7.2$  mg/g). Shal, mango and cashew exhibited comparatively lower polyphenol content ( $92.2 \pm 6.1$ ,  $84.1 \pm 11.3$  and  $66.6 \pm 10.7$  mg/g respectively) and lower tannin content was observed in shal ( $42.4 \pm 8.6$  mg/g), cashew ( $66.6 \pm 7.2$  mg/g) followed by mango ( $64.1 \pm 3.1$  mg/g). Rates of degradation (90 days) of nutrient parameters of these leaf litters by the two test species showed significantly higher rates in microcosms with the test specimens in comparison to control indicating the significant role of earthworms as decomposers. Maximum degradation of reducing sugar, total carbohydrates and proteins were found in cashew followed by shal and mango which exhibited rates of degradation which did not differ significantly among each other ( $p < 0.05$ ) whereas significantly lower rates of degradation by the test species were found in eucalyptus followed by acacia. The results indicated that higher content of tannins and polyphenols in case of eucalyptus can be related to the least colonization and feeding preference by the two test organisms for this tree species. Again higher rates of degradation and thus utilization of nutrient parameters like reducing sugars, total carbohydrates and proteins in cashew and shal can be related to these leaf litters being preferred as feed and thereby showing maximum colonization by *P. excavatus* and *L. mauruti* respectively. Thus it can be concluded that cashew and shal can be considered as suitable tree species for afforestation practices for nutrient recycling, soil conservation and environmental management.

### Biography

Sayantani Pattanayak did her M.Sc in Zoology from Vidyasagar University in 2006. She is working as an Assistant Teacher in Digha Alankarpur Mahavidyalay- a Government sponsored high school in West Bengal since 2011. She is a part time registered Ph.D scholar under Vidyasagar University; W.B. Smt. Pattanayak is currently working on nutritional ecology with respect to forest ecosystem.

sayancmp@gmail.com