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## Litter Decomposition and Nutrient Release from two Forest Species in the Southern Bakundu Forest Reserve Cameroon

ANTOINE MVONDO ZE, SUZANNE MOGUE K., GRACE MENDI

*University of Dschang, Cameroon*

### Abstract

The decay of organic matter returned to the soil via litter fall is an important source of nutrients for vegetation uptake. Leaf litter decomposition and nutrient dynamics of *Irvingia gabonensis* and *Ricinodendron heudelotii* were studied in the tropical forest: Southern Bakundu forest reserve, South West Region of Cameroon. These two tree species are of great nutritional importance to the farmers and consumers in this region and they serve as a major source of income for farmers and producers.

The rate of decomposition ( $k$ ) of organic matter was measured using 80 litter bags (40 treated with a probiotic, LMO and 40 untreated). Litter bags were placed on the forest floor fastened by iron wires on the 20<sup>th</sup> of April 2009. Four litter bags of each treatment were collected monthly and taken to the laboratory where they were washed, dried and weighed to get the final mass. Chemical analysis were conducted for N, P, K, Ca, Mg and K. The two-way ANOVA was used to compare the treatments and species followed by the Student-Newman-Keuls test at 5 % level of probability to compare the decomposition rates between the two species at 8 weeks of decomposition.

The decomposition rate of *R. heudelotii* was faster (0.69 and 0.63 week<sup>-1</sup> for treated and untreated litter respectively) than that of *I. gabonensis* ( $p < 0.0001$ ). Potassium and calcium were the fastest elements released in both species, phosphorus, sodium and magnesium showed immobilisation in *I. gabonensis*. A 100 % decomposition and release of all nutrients was observed after the 8<sup>th</sup> week in *R. heudelotii*. Treated leaf litter decomposed faster than untreated leaf litter in both species although there was no significant difference at the 5 % level of probability.

Conclusion: It was deduced from this study that *R. heudelotii* could be the preferred species of agroforestry for this tropical region of Southern Bakundu and could thus be used to enrich impoverished soils and close forest gaps since it decays and grows faster than *I. gabonensis*.

**Keywords:** Cameroon, *Irvingia gabonensis*, litter decomposition, Light Matrix Organics (LMO), nutrient release, *Ricinodendron heudelotii*, southern Bakundu forest