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Nutrient leaching of selected invasive plant materials

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Thithonia diversifolia, *Sphagneticola trilobata*, *Mikania scandens*, *Lantana camara*, *Chromolaena odorata*, *Panicum maximum* and *Mimosa pigra* are fast growing invasive plants in Sri Lanka. In this study, the nutrient release potential and the weight loss dynamics during leaching of the above weeds were investigated with a view of utilizing them as sources of organic liquid fertilizers. Fresh leaves and immature shoots of the selected plant species were collected from Gampaha area. Samples were washed twice with distilled water and oven dried at 80 ^{o}C to a constant weight. For each species, thirty-six dried- leaves and immature shoots samples of 5 g were placed into 0.18 x 0.18 m^2 single layer nylon mesh bags with 2 mm mesh size and submerged separately in 1 L of distilled water in plastic containers at the room temperature with three replicates each. Mesh bags without leaves and shoots submerged in distilled water were used as the control. Three mesh bags of each plant species were randomly collected at weekly intervals for a period of three months and the weight loss of plant material after drying in an oven at 80 ^{o}C to a constant weight, electrical conductivity and pH of the leachates were determined over time. At the end of the leaching experiment, nutrient contents of the leachates were determined using the standard methods. Results revealed that mass loss was significantly higher ($p< 0.05$) for *M. scandens* (97 %) followed by *T. diversifolia* (95.8 %) and the lowest for *P. maximum* (63.7 %). The highest pH and electrical conductivity were observed in *L. camara* (7.86±0.06) and *M. scandens* (2139±4.7 µS cm^{-1}) respectively, and the lowest in *P. maximum* (7.40±0.02, 877±7.6 µS cm^{-1}). Nutrient contents of the leachates of *T. diversifolia;* (N 160.4±2.1 mg/L, P 8.0±0.5 mg/L, K 349.0±3.0 mg/L), *M. scandens;* (N 142.8±3.0 mg/L, P 11.1±1.6 mg/L, K 464.3±9.0 mg/L) and *C. odorata;* (N 190.0±10.0 mg/L, P 9.5±1.5 mg/L, K 338.7±2.5 mg/L) were significantly higher than those of *P. maximum* (N 71±3.6 mg/L, P 8.3±1.2 mg/L, K 54.0±4.6 mg/L) suggesting that they could be effectively utilized as nutrient-rich sources to formulate environmental friendly organic liquid fertilizers.

Keywords: Invasive plants, Nutrient leaching, Organic liquid fertilizers