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An Evaluation of Nitrogen (N), Phosphorus (P), Potassium (K) Levels in Gliricidia plants Grown in Sri Lanka to be Used as Biofertilizers

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Fertilizers are materials that can be added to soil to supply nutrients. These materials can improve the health and appearance of plants in lawns and gardens as they provide the essential nutrients such as nitrogen (N), phosphorous (P) and potassium (K). An investigation has been carried out to evaluate nitrogen (N), phosphorous (P) and potassium (K) levels in three types of gliricidia species that are grown in Sri Lanka. Unlike in developed countries, in developing countries like Sri Lanka, relatively little or no attention have been devoted to find out the nutrient content of gliricidia to use it as a biomass fertilizer. Gliricidia was found to be one of the multipurpose leguminous trees that could be utilized as green manure, fuel wood for electricity generation, livestock feed and plantation shade. Gliricidia is adapted to wide-ranging agro-climatic and soil conditions and can be cultivated all over Sri Lanka except in coastal areas, on mountain tops and in arid areas. Due to increasing concern over the environmental impact and the cost related to the mineral fertilizer application in Sri Lanka, finding and application of alternative biomass fertilizers are required for the development of the country both environmentally and economically.

Three types of gliricidia species that are in Sri Lanka were investigated in this research work. Leaf, mid rib, bark, stem and root parts in each gliricidia type were chemically analyzed to evaluate nitrogen, phosphorous and potassium contents. Experimental results indicated that the level of nitrogen in different parts of the gliricidia plant varied from 0.96±0.07 % to 3.27±0.23 %.It was found that phosphorous and potassium content in gliricidia plant varied from 137.6±10.6 mg kg^{-1} to 2542.9±40.3 mg kg^{-1} and from 208.6±10.7 mg kg^{-1} to 3405.9±131.1 mg kg^{-1} respectively. The maximum nitrogen and phosphorous content was found in leaves when all the parts of gliricidia plants were analyzed. The highest potassium content was found in mid ribs of the plant. According to the experimental results gliricidia plant has higher level of nitrogen compared to phosphorous and potassium. Therefore, experimental results revealed that gliricidia is more suitable as a nitrogen source that could replace urea fully and replace the potassium & phosphorus requirements partly, and is one of the best biomass fertilizers.

Key words: Biomass, Fertilizers, Gliricidia, Nitrogen, Phosphorous

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