

**RELEASING NITROGEN AND POTASSIUM BY  
DECAYED LEAVES OF PURPLE YAM (*Dioscorea alata*) TO SUCCEEDING  
CROPS**

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Effective crop rotation using *Dioscorea alata* with a cereal or a legume is a prominent cropping system in subsistence agriculture. Above ground biomass of *D. alata* has an enormous potential as a manure. Objectives of this study were to determine releasing of nitrogen and potassium by decayed leaves of *D. alata* to the succeeding crop. A pot experiment was conducted using two model crops i.e. maize and cowpea. Model crops were grown using *D. alata* shoots as the sole source of fertilizer. Leaves and stems were obtained from fields of *D. alata* grown in different fertilizer regimes in the previous season. Nitrogen (N) and potassium (K) soil and crop at vegetative, five leaf (V5) and reproductive, first flowering (R1) were evaluated. Growth parameters of two model crops were statistically similar despite some quantitative changes resembling the impact of high fertilizer regimes of *D. alata*. Generally, soil N was high in leaves from high N regimes and it was more prominent in maize, where a significant difference was observed. Mean soil N was similar for cowpea irrespective of sampling date. Soil K did not vary at V5 for both model crops. At R1, higher soil K was observed in cowpea compared to maize and it was correlated to the higher K fertilizer regimes of *D. alata*. Being a legume, cowpea showed inherently high shoot N content, values were similar irrespective of treatments. In maize, high N was evident in plants treated with leaves from high N regimes. Shoot K of both crops did not vary according to *D. alata* fertilizer regimes, however, quantitatively high K was evident in cowpea. Nutrient use efficiency was high in cowpea and leaf nutrient content of *D. alata* showed a positive correlation. Therefore, *D. alata* rotation with a legume is more effective and application of synthetic fertilizers increases its yield and yield of succeeding crops.

**Keywords:** *D. alata*, Nitrogen, Nutrient use efficiency, Potassium, Succeeding crop