



How to improve fertility of African soils? Leguminous fallows (Cameroon), addition of farmyard manure and mineral fertilizer (Kenya), organic residues management and introduction of N₂ fixing species in forest plantations (Congo).

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Most of African soils are inherently infertile and poor in nutrients mainly nitrogen and phosphorus. Several practices are used to improve soil fertility, increase productivity and ensure their sustainability. Soil fertility in the leguminous fallows was evaluated through particulate organic matter (POM), the more active part of soil organic matter (SOM) in Cameroon. The combination of mineral and organic (manure) fertilizers increased microbial P biomass allowing the release of P along the plant growing period in the Kenyan soils. Organic residues management and introduction of nitrogen fixing species (*Acacia*) were used to improve soil fertility and sustain forest productivity on the coastal plains of Congo.

SOM fractionation was made under *Pueraria*, *Mucuna* fallows and natural regrowth mainly *Chromolaena* and under 3 forest plantation treatments installed in previous savanna: 1) no input, 2) normal input, and 3) double input of organic residues. Microbial P biomass and sequential P fractionation were evaluated in high and low P fixing soils. N, C, available P and pH were determined on soil sampled in *acacia* (100A), *eucalypt* (100E) and mixed-species (50A:50E) stands. N and P were determined in aboveground litters and in leaves, bark and wood of trees.

The two leguminous fallows increased N content in POM fractions i.e., $N > 1$